THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
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# COMPUTERWORLD

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# Sparse coverage for viruses

*Computer insurance policies inadequate in face of spreading infection*

BY JAMES DALY
CW STAFF

Returning home from a vacation, you notice your front door ajar and the house looking as if a hand grenade was tossed in. You can't sue the perpetrator, but at least you can rely on your insurance company to take the sting out of the loss.

Unfortunately, computer users who suddenly discover their data destroyed, removed or mangled by a computer virus may not have such protection.

A recent survey of insurers providing computer security policies revealed an industry with not only a dearth of knowledge about viruses but an inability to determine whether policyholders are now or will ever be covered. And at least one underwriter has also begun to specifically reject virus protection.

"I've seen two policies issued by Lloyds of London that excluded viruses, and neither firm had ever been hit with [a virus] before," said Dean Felton, a senior vice-president at Alexander and Alexander Services, Inc., an international insurance broker based in New York.

Even where virus protection is not specifically excluded, an enormous gray area exists. "We're looking into it, but we're not sure it would be covered anyway," said Ted Parks, a representative with U.S. Fidelity & Guaranty Co. in Baltimore.

**Hacker shackled**

• Juvenile charged with pilfering software from AT&T network. Page 104.

### Doomsayers

Others put it more bluntly. "I don't think you'll see coverage ever offered," said Paul Goodman, an attorney at Elias and Goodman PC, a New York law firm specializing in computer security.

The nub of the underwriters' reluctance stems from the current rash of computer crime. At a recent American Bankers Association conference, a speaker from Lloyds of London said the

*Continued on page 104*

# Lotus execs beating products out the door

BY DOUGLAS BARNEY
CW STAFF

CAMBRIDGE, Mass. — The bodies are still flying at Lotus Development Corp. as the firm puts the hammer down to finish 1-2-3 Release 3.0 by year's end.

The latest executive to pack it in is Irfan Salim, who was brought over from England 10 months ago to run spreadsheet marketing. For now, at least, software development chief Frank King will take over Salim's responsibilities.

The flood of high-level departures is attributed by some to the fact that Lotus is no longer a start-up and now has all the trappings of a large firm. Others peg the desertions on new levels of pressure, a lack of upward mobility, failure to produce and, in some cases, new opportunities.

The spate of defections began last March, when software development head Charles Digate left the spreadsheet titan. A week later, the image-bruising six-month delay in the shipment of Release 3.0 was announced.

Two weeks after resigning, Digate was replaced by ex-IBMer King, who has already brought an IBM style of discipline and control to a far-flung group of 700 software development-related employees.

Since then, at least six high-level employees have left, including two just last week.

Much of the tone at Lotus is

*Continued on page 10*

# Extended Netview/PC on horizon

BY ELISABETH HORWITT
CW STAFF

An OS/2 Extended Edition version of Netview/PC that IBM is expected to announce next month will overcome limitations of the existing PC-DOS version that have plagued users and vendors alike, industry sources said recently.

In a closed meeting with networking vendors whose products support the current PC-DOS version of Netview/PC, IBM reportedly disclosed the following details about the upcoming version:

- It will run on a multitasking IBM Personal System/2 running OS/2 Extended. The current version runs on single-tasking PC-DOS.
- It will eventually include a graphics-based user interface — but not necessarily in the first release.
- Developers will be able to

*Continued on page 105*

# New face around the old ball yard

BY STEPHEN JONES
CW STAFF

LOS ANGELES — It was the kind of finely executed play that would bring most baseball crowds to their feet.

The Los Angeles Dodgers knew they had to move fast last month when the rival Cincinnati Reds released Mario Soto, a right-handed pitcher who could help round out the Dodgers' bullpen. Tapping into a statistical network developed by IBM for Major League Baseball, it took Dodgers management just minutes to field critical season and lifetime statistical summaries to determine Soto's chances of future success.

**Take a PC** *out to the ball game*

The Dodgers apparently liked what they saw, and as smoothly as picking a runner off second base, Soto was signed by the leaders of the National League West division. But "Dodger Blue" is not the only organization using this new Big Blue technology.

IBM and Major League Baseball will announce today that all 26 major league teams are running the Baseball Information System, an MIS project allowing each ball club to feed and draw data from a mainframe located in New York at the Commissioner's Office.

From earned run averages to batting percentages with men in scoring position, statistics are the lifeblood of baseball. Fans, players and the

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NEWSPAPER

SECOND CLASS MAIL

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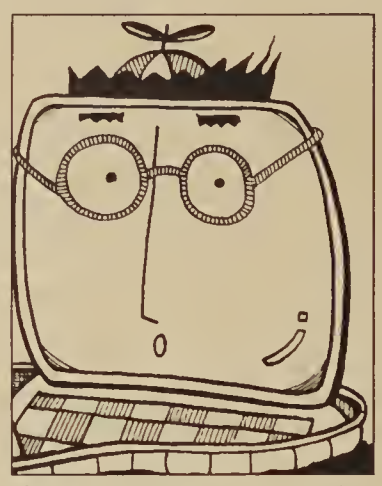

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HAROLD HIGHLAND
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N E W S

# Bechtel nuclear group splits MIS core in two

BY KATHY CHIN LEONG
CW STAFF

SAN FRANCISCO — Nuclear-engineering giant Bechtel Corp. has revamped its MIS organization, splitting the division into two groups that will focus on developing the internal MIS operation and selling computer services to the outside world, respectively.

The news is the third major event that has swirled through San Francisco Bay Area MIS shops this summer. In June, Chevron Corp. announced it was closing one of its three data centers. Last month, Bankamerica Corp. ended its hunt for a new vice-president of information services, hiring Mike Simmons, former president of Fidelity Systems Co.

Bill Howards, vice-president of information technology at Bechtel, retains his title as the No. 1 executive for MIS but will be focusing his energies on Information Technology, a newly named holding organization for four Bechtel companies.

The companies are Bechtel Software, Inc. in Acton, Mass.; Technology Applications, Inc., a Jacksonville, Fla., expert systems company; Bechtel Information Services SEC Express, a records management organization in Rockville, Md.; and Bechtel Information Technology Products & Services, a San Francisco service bureau that resells internally developed Bechtel services.

### Newcomer promoted

John Campbell, former manager of information planning, has been promoted to lead the 560-employee internal MIS group. Campbell said the promotion represents his first MIS management position. "My background for the past seven years here has been in financial operations and reporting," he said.

As a user of Bechtel information services, his financial operations role enabled him to work with MIS executives throughout the organization.

At the forefront of priorities in Campbell's group is the development of a strategic information system that will allow faster data access for employees. The project involves an understanding of what kind of data is strategic to the company and how to design systems that will make it easier for users to collate information in a meaningful way, Campbell noted.

The project involves the meger of some databases as well as the creation of new ones where needed. Campbell said the plan will entail encouraging users to take advantage of the data available to them. "Building a comprehensive system is no good if people don't use it," he said.

# On-Line offloads sales

*Revamp entails crew cuts, Ramis de-emphasis*

BY ROSEMARY HAMILTON
CW STAFF

FORT LEE, N.J. — On-Line Software International, Inc. will cut approximately one-third of its direct sales force, John Crocker, senior vice-president, confirmed last week.

The reduction of the 60-person direct sales group began last week and should continue this week, Crocker said. The consolidation will also involve closing four of the company's eight local sales offices and establishing four regional centers in their place.

The cutback is, in part, a result of the overall reorganization of the company's sales effort that began last December. On-Line has been placing less emphasis on its Ramis fourth-generation language (4GL) product, which has been sold only by the firm's direct sales force. According to Crocker, Ramis does not require as large a sales force as it once did because the 4GL market is not providing the revenue the company expected. "It's a maturing market [where] we see a steady stream of revenue but not substantial growth," Crocker said.

Meanwhile, the company is placing more emphasis on its traditional product line, which is made up primarily of productivity tools for the IBM mainframe environment, as well as on its newer computer-aided software engineering products.

Recently, the direct sales force was assigned the task of selling productivity tools in addition to big-ticket items such as Ramis.

The cutback, which could involve up to 20 people, depending on who is willing to be reassigned, is also in response to the company's year-end results. On-Line wrapped up its fiscal year with a disappointing fourth quarter, which showed a net loss of $3.9 million. Crocker noted that the sales force reduction should help bring expenses back in line.

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# Unisys snaps up Convergent

*Pays $350 million, hopes to gain workstation expertise*

BY JEAN S. BOZMAN
and JULIE PITTA
CW STAFF

BLUE BELL, Pa. — Driving to double its revenue to $20 billion by the early 1990s, Unisys Corp. announced an agreement in principle last week to acquire Convergent Technologies, Inc., gaining workstation development assets intended to help counter sluggish mainframe sales.

Convergent, based in San Jose, Calif., agreed to be acquired for approximately $350 million in cash and newly issued Unisys stock. If Convergent stockholders approve the agreement, the purchase will become final in three to four months, Unisys spokesmen said.

Unisys will gain 3,400 employees, two California factories totaling 270,000 square feet of manufacturing space — and much expertise in supermicro design based on the Intel Corp. 80386 and Motorola, Inc. 68000 microprocessor chips. It will also gain Convergent's experience in marketing to third parties.

"We're driving for a bigger role and a greater share in the distributed-systems marketplace," said Peter D. Bakalor, Unisys' vice-president of market strategy. Unisys wants to provide a wide product mix, Bakalor added, including products that offer two or more operating systems. "We expect to balance the slowing growth in the mainframe area with the strong growth in the workstation area," he said.

Last year, Unisys rang up $1.7 billion in 1987 sales of distributed systems based on Unix, Microsoft Corp.'s MS-DOS and OS/2 operating systems and on the Convergent operating system, CTOS, which Unisys calls BTOS. Sales of Unix systems alone are expected to rake in $800 million this year. Unisys said it expects sales of networked systems to grow as much as 40% per year.

> "IT'S ANOTHER example of how Blumenthal adds one and one and makes three."
>
> MIKE GERAN
> NIKKO SECURITIES

### The new math

Wall Street observers viewed the move as one of many planned Unisys acquisitions. "It's another example of how Blumenthal adds one and one and makes three," said Mike Geran, senior analyst at Nikko Securities Co. in New York. "He's continuing to follow an evolutionary acquisition strategy."

As chief executive officer of Burroughs Corp., W. Michael Blumenthal acquired Sperry Corp. in 1986; Unisys, formed from the combination of the two, bought Timeplex, Inc., a Woodcliff Lakes, N.J., network systems manufacturer, last year.

**Unisys' Blumenthal**

Convergent, which showed a $32 million loss on sales of $385 million last year, should benefit from its sale to the nation's third largest computer manufacturer. Don Bellomy, a senior analyst at International Data Corp. in Framingham, Mass., said Convergent's OEM sales were "keeping it afloat" but the cost of diverting its vertical-market applications lessened profits. "Convergent and Unisys will benefit together from a large company's economy of scale," he said. Unisys, with $10 billion in sales, has 60,000 customers and 90,000 employees worldwide.

Acquisition does not necessarily spell immediate layoffs at Convergent's plants, although Unisys executives conceded that there is some administrative overlap between the two firms. In a letter to Convergent employees last week, Blumenthal said he was inviting the firm and its chairman, Paul C. Ely Jr. "to assume a leading role in our entire microsystems business."

If Convergent's stockholders approve the agreement, Convergent will become part of a newly created Unisys subsidiary devoted to the creation of distributed systems. Convergent would mirror the role of Timeplex, which has become the nucleus of the Unisys Networks division.

Ely would join Unisys' eight-member management board, an internal board of directors composed of senior executives, with responsibility "for the overall mix of distributed and intelligent workstation products," Bakalor said.

### Room to move

Geran predicted that Ely, "if he does a great job," will be in the running for the Unisys CEO position when Blumenthal retires.

In an interview last week, Ely said Unisys has "a major strategy in place to become a leader in distributed systems." Convergent already is "playing a larger and larger role in that," he said.

Ely expressed some disappointment that Convergent was not able to independently follow its strategy to become a leading systems supplier to independent businesses. "I don't think Convergent needed a corporate parent," he said, but he added that increasingly, his company was developing a parallel relationship with Unisys.

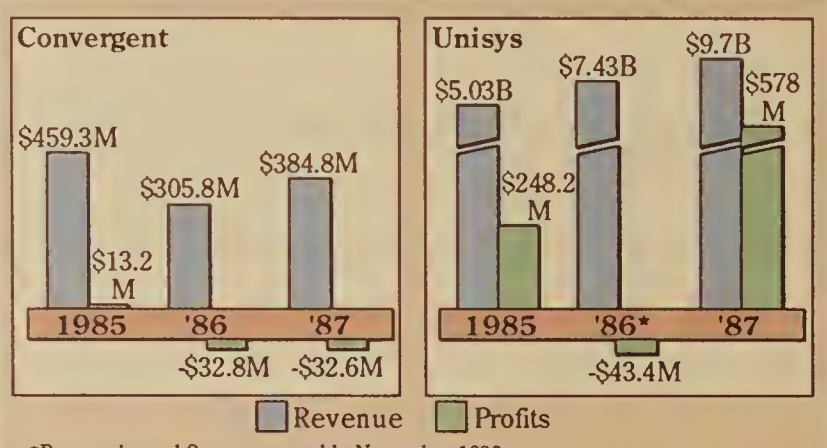
Unisys and Convergent have a relationship that dates back to 1980, when Burroughs bought its first CTOS-based work group clusters. Unisys purchases of Convergent systems accounted for 20% of Convergent's $385 million in sales last year.

Once a leading light among Silicon Valley start-ups, Convergent's fall from grace began when its largest customer, AT&T, severed their relationship. "AT&T went through an agonizing appraisal of its computer business," said Ely, who was brought in from a fast-track career at Hewlett-Packard Co. "In doing so, they realized that sales of the system we were providing to them weren't selling as they hoped. In three quarters, our sales to AT&T went from $50 million to zero."

Convergent cofounder Allen Michels, now president of Ardent Computer, Inc., viewed the combination positively. "It seems like it makes sense," he said. "The opportunity at Convergent, combined with its stock price, was not lost on a man of vision and wisdom like Mike Blumenthal."

## Convergence

*The Convergent acquisition will add little to the bottom line at Unisys but can be expected to lead to cost-cutting as Unisys absorbs its prime workstation supplier*




*Burroughs and Sperry merged in November 1986

CW CHART

## Convergent's nine-year history

**August 1979:** Convergent is founded by three managers from Intel Corp.'s Microcomputer Systems Division, Allen Michels, Cal Hubler and Robert Garrow. Private investors contribute $2.5 million in seed financing. The company's charter is to develop a multifunction workstation with the capabilities of a minicomputer for the desk top.

**Fall 1980:** Unisys becomes a Convergent customer, first purchasing Convergent's Integrated Work Station based on the CTOS operating system, considered the first real-time, multitasking operating system.

**Fall 1983:** Convergent signs an agreement to develop workstations for AT&T. At its peak, AT&T accounts for half of Convergent's revenue.

**January 1985:** Paul Ely joins Convergent as chief operating officer, later becoming its chief executive officer as Michels steps away to become chairman.

**November 1985:** Allen Michels leaves Convergent to start Ardent Computer, Inc.

**April 1986:** Convergent announces that AT&T will no longer purchase Convergent's workstation. Convergent's shipments and revenue fall off sharply. Losses ensue.

**August 1988:** Unisys acquires Convergent for $350 million in cash and a new Unisys stock issue.

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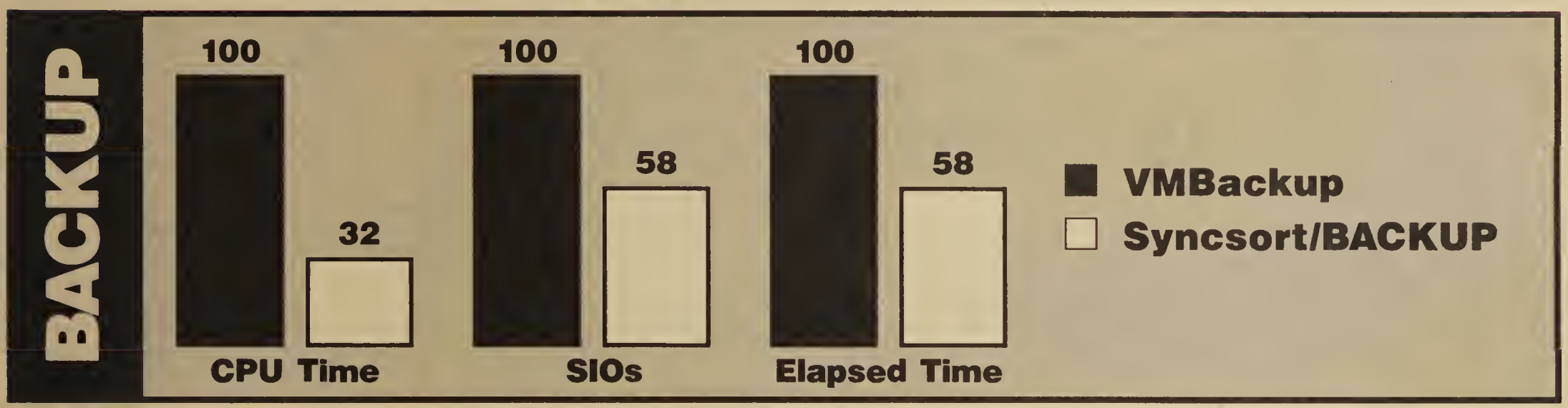


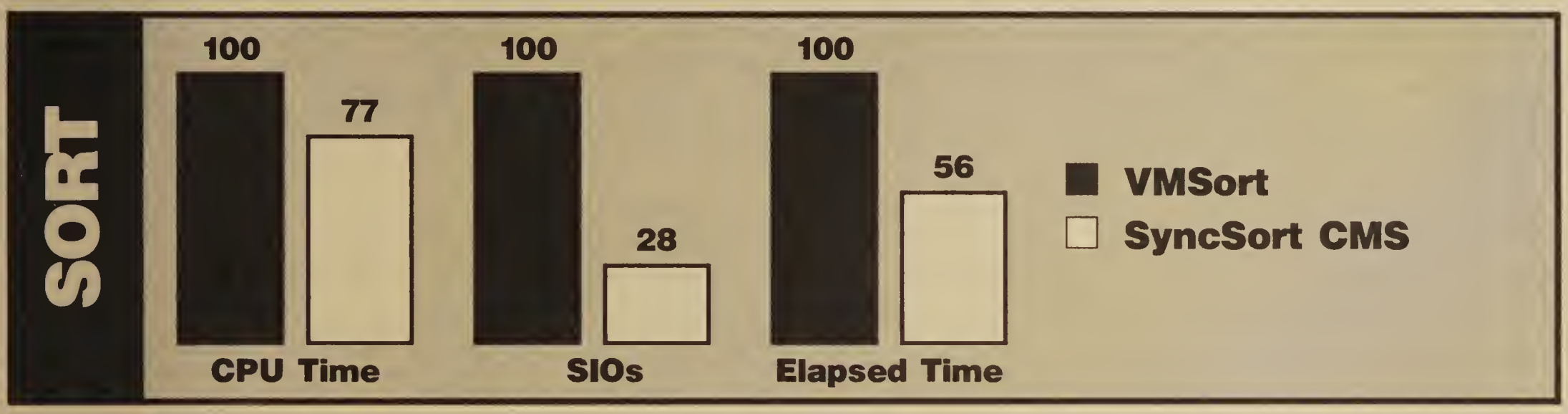


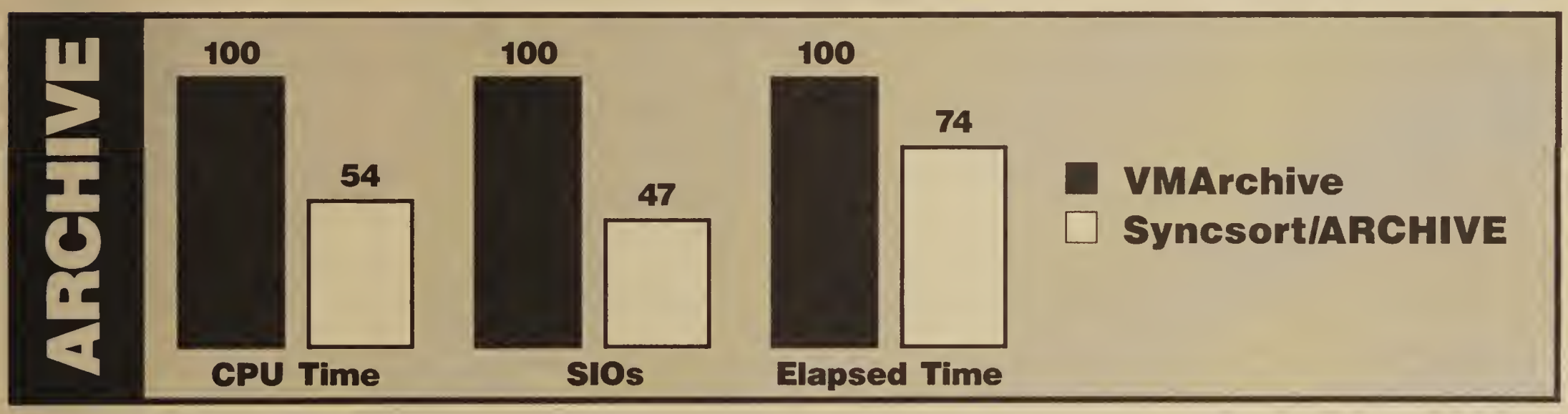

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# Apple keen on Unix future

*Firm trumpets A/UX as calling card for government contracts*

BY ALAN J. RYAN
CW STAFF

BOSTON — Apple Computer, Inc. is still trying to get its foot in the Unix door with its 7-month-old rendition of that operating system. But for now at least, the company's current user base remains firmly entrenched in the non-Unix world.

At Macworld Expo/Boston, the Cupertino, Calif-based vendor said that with A/UX, which was shipped in February after a seven-month delay, it can make inroads in the lucrative government marketplace, which has been slow to accept Apple.

"We've made some mistakes" with A/UX, admitted product manager Bill Jacobs. But, he added, the problems and bugs are being worked out and will be corrected in the expected upgrade, Version 2. Jacobs would not say when Version 2 will be available.

Jacobs said that Apple's version of Unix could garner increased corporate use of the Macintosh but that the bigger markets will be education and government. He said that many government agencies are required to purchase computers that can run Unix.

"We're adding to Unix all the pieces to make it look like a Macintosh," Jacobs said, adding that that includes compatibility. In time, any Macintosh application should be able to run on A/UX. "Developers only have to follow the Apple development rules" and the products they develop for the Macintosh will run under A/UX, he said.

> "WE'RE ADDING to Unix all the pieces to make it look like a Macintosh."
>
> BILL JACOBS
> APPLE

Currently, Jacobs said, many of the third-party Apple developers are working to make their products support A/UX.

**Likely candidates**

While Jacobs declined to name specific vendors that were working on A/UX versions of their software, he did say that likely candidates would include Microsoft Corp., Claris Corp. and Cricket Software, Inc.

"About 10% of the Macintosh applications today will work properly with A/UX because they've followed the Apple development guidelines," Jacobs said. For companies whose Macintosh products do not currently work with A/UX, Jacobs said Apple is advising them not to create A/UX-specific versions of their products. "We're telling them just to fix it in their next upgrade."

**Hungry program**

Some have complained that the program is a memory hog; A/UX takes up most of 80M bytes on a hard disk, Jacobs admitted.

"But it takes up no more space than what the user would expect for Unix," he added, because it includes other memory fillers like networking, printing formatting capabilities, source code, compilers and some word processing packages.

Speed is another consideration when running Unix in non-workstation environments. Overall, Jacobs claimed, A/UX on the Macintosh is at least as fast as the low-end workstation offerings from Sun Microsystems, Inc. "We have made grand strides in speed since the original product was introduced in February," he said.

Apple recently announced its intent to support the National Bureau of Standards' Posix specification, Draft 12. The specification is awaiting approval as an interim standard for federal information processing.

# Hypercard in limelight

*But variety marks product introductions*

BY ALAN J. RYAN
CW STAFF

It was the show of the Hypercard applications when Macworld Expo/Boston opened its doors, for it was the first anniversary of Apple's hyped-up hypertext product rollout. More than a dozen stackware products were on display.

But exposition attendees also found hardware and other software products that could bring more of corporate America into Apple's user fold.

Among the most interesting hardware tools for the Macintosh was Apple's own Apple Scanner, an optical image scanner that allows users to integrate line art, halftones and gray-scale images into Macintosh applications. Images can be scanned in black-and-white and transmitted to a facsimile machine or to another Macintosh. It is available immediately and sells for $1,799.

**Powerful Mac**

Also announced by Apple was a 4M-byte configuration of its Macintosh II, which will sell for $7,269, and a 4M-byte Macintosh II memory expansion kit, which will sell for $2,399. Both are available immediately.

Perfectek Corp. announced a Microsoft Corp. MS-DOS coprocessor board for the Macintosh II that provides MS-DOS software compatibility for the Macintosh II. The board comes configured with 1M byte of memory, which can be used as expansion memory when not being used to run MS-DOS applications. It will sell for $1,495, according to the company.

Irwin Magnetic Systems, Inc. announced the Model 5080, a tape backup system for the Macintosh that can back up as much as 80M bytes of hard-disk data onto a single standard DC 2000 minicartridge. The system's price is $1,695. It is scheduled for availability early next month.

**Digitizing**

AST Research, Inc. displayed Nuview, an 8-, 16- and 24-bit color-image capture card for the Macintosh II that digitizes and manipulates real-world, real-time images from video cameras, videocassette recorders, videodisk players or camcorders. Users can manipulate the image on the screen to make it a background window under Apple's Multifinder. It is priced at $2,099.

Jasmine Technologies, Inc. introduced Directprint, a liquid-crystal shutter nonimpact Adobe Systems, Inc. Postscript-compatible page printer. The 300 dot/in. unit features a 4-MHz processor with 3M bytes of random-access memory. It operates at 4 million instructions per second and will sell for less than $4,000.

Software rollouts include Microsoft Corp.'s Version 2.0 of Microsoft Works for the Macintosh. This version includes drawing tools that provide basic desktop publishing capabilities, macros for automating repetitive tasks and a spelling checker. The product reportedly will sell for $295 and be available in October.

Farallon Computing, Inc. introduced Screenrecorder, which allows users to record Macintosh screen sessions onto disk and play them back at various speeds, similar to a videotape. It will sell for less than $200 and is slated to be available later this year, the company said.

# Oracle for the Mac may point to future

Oracle Corp. offered its contribution to boost the business credentials of Apple's Macintosh last week by announcing a version of its SQL-based database management system, called Oracle for Mac.

Oracle also modified its distributed DBMS, SQLstar, to allow the Mac to work with other Oracle and IBM databases in distributed environments. The announcements were made at Macworld Expo/Boston last week.

Oracle for Mac includes a Hypercard interface, called Hyperstar SQL, that enables users to link Hypercard applications directly to Oracle DBMSs on a companywide network. The direct interaction between Hypercard and the DBMS requires the SQLstar architecture.

Apple continues to see its image as a player in corporate America bolstered by product announcements such as Oracle for Mac.

SQL, which helps users draw information from mainframe databases, has become an important item with Fortune 1,000 MIS managers who see linkage with mainframes as inevitable. Analysts have long held that such capabilities will have to be widely available on the Mac if it is to widen its share among business users.

The Mac DBMS requires a Mac Plus, Mac SE or Mac II and Hypercard 1.2. It also uses 5M bytes of random-access memory and a floppy disk drive. The price for the networking version of Oracle for Mac is $999; a single-user developer's version costs $199. The product will be available in early November, according to the firm.

STEPHEN JONES

# Mac links flood the show floor

BY JAMES DALY
CW STAFF

Apple saw the connectivity options for its Macintosh family take a giant step forward last week as networking product introductions permeated Macworld Expo/Boston like the haze that enveloped the city during the three-day show.

The introductions fed off Apple's aggressive Macintosh connectivity strategy, which targets an enormous installed base of IBM, Digital Equipment Corp. and multivendor networks.

3Com Corp. headlined its attendance with the announcement of an Ethernet adapter for the Macintosh SE and laid out a road map of its future Macintosh connectivity plans.

The Etherlink/SE will operate on 10M bit/sec. Ethernet networks and ship with Telenet Communications Corp. terminal emulation software. The adapter is also compatible with 3Com's 3+ for the Macintosh, Apple's Appleshare and Tops, a network operating system issued by Tops, a division of Sun Microsystems, Inc., the firm said. The adapter is slated to be available in December for $595.

The Santa Clara, Calif.-based concern also fleshed out its strategy for connecting the Macintosh to its 3+Open Lan Manager, which is set to begin shipping in October. The firm said the 3+Open Lan Manager will support the Appletalk Filing Protocol, Apple's Printer Access Protocol running on the 3+Open server and Appleshare workstation software.

**DCA in on act**

Alpharetta, Ga.-based Digital Communications Associates, Inc. (DCA) also expanded its Mac connectivity options with a rollout of software for its Macirma products that enables the Macintosh SE and Macintosh II to access IBM mainframes.

DCA's Macirma API software set is a series of specifications that enables users and developers to write customized programs in various computer languages, the firm said. Macirma API supports the C language and Apple's Hypercard application and scripting language. It will be priced at $195 when it ships in the fourth quarter of this year, the vendor said.

In addition, Network General Corp. rolled out a model of its Sniffer network protocol analyzer. The PA-1310 Appletalk Protocol Suite is priced at $995.

# Apple-DEC alliance haze lifting

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

BOSTON — Apple Computer, Inc. and Digital Equipment Corp. hit mid-stride here last week with a second, more detailed look at one of the most drawn-out unveilings to date of a strategic alliance. But for users, the song remains the same: Commercial products are at least six months away.

Moreover, the vendors said the bulk of end-user products and developer's tool kits will begin to appear next summer.

When the alliance was first announced in January, Apple and DEC merely teased users with hints of their plans. Users had to wait until the Apple Developers' Conference, held here last week prior to Macworld Expo/Boston, to read the fine print.

"This alliance was meant to be evolutionary," said Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in San Jose, Calif. Most of the pieces missing in January are now in place, he said, citing the firm's latest announcements [CW, Aug. 8].

Key capabilities that will be available by fall 1989 include the following:

- Appletalk for VMS and Appletalk-Decnet Transport Gateway, both of which will provide the basis for developing applications that access both systems.
- Apple support for two DEC standards for encoding compound document components and for DEC's upcoming Remote Procedure Calls, a mechanism for distributing applications on a network.
- DEC service for Apple products at DEC user sites. However, DEC will not resell Apple's Macintosh.

**Veiled caution**

The long-awaited details produced optimistic caution. "The important thing about this relationship is that it's going to mean a lot of new choices," Bajarin said.

Despite the welcome development guidance, Apple and DEC came up short in two significant areas.

One is support for DEC's Ultrix. A press release noted that there are no plans for Unix in the joint development agreement. "If users say Ultrix support is important to provide, then we will," said John Rose, a group manager with DEC's Personal Computing Systems Group. Jean-Louis Gassee, a senior vice-president at Apple, said that the strategy called for supporting all major standards.

A second neglected area is explanation of cross-network management plans. Apple talked about allowing integrated management of the combined networks but said no third-party application programming interface is planned at this time.

Also left blank for users was the eventual price tag for these innovations. Many currently apply third-party Band-Aids to their needs. Without knowing how much software will be available and at what price, a user at a large aerospace manufacturer said it will take more than an Apple logo to get his company to switch.

# DEC to add enhanced Ultrix

BY STANLEY GIBSON
CW STAFF

Digital Equipment Corp. is set to announce a new version of Ultrix Aug. 23, according to consultants briefed by DEC last week.

The new version of Ultrix, DEC's adaptation of the Unix operating system, will boast AT&T Unix System V Interface Definition and Posix compliance but will not include a symmetrical multiprocessing feature, the analysts indicated.

According to a source close to DEC, the upcoming announcement will be split more or less evenly between software and networking, although little information on networking aspects was available.

DEC has promised symmetrical multiprocessing with Ultrix since it was added to DEC's VMS operating system earlier this year. DEC told consultants the feature will soon be added but will not come as part of the Aug. 23 announcement.

Earlier this year, DEC introduced enhanced real-time features for its VAX computers. Last month, DEC introduced on-line transaction processing software designed to run under VMS. DEC has indicated that all those features will be offered with Ultrix but has been unclear as to when.

One consultant at the briefing reported that DEC said the new Ultrix version will feature Posix compliance, Network File System (NFS), a Decnet gateway and C, Fortran, Pascal and LISP licenses.

"All their talk centered around Posix compliance and NFS," said John Logan, a vice-president with the Aberdeen Group in Boston.

"A lot of people don't believe DEC is serious about Ultrix," said Nina Lytton, director of distributed systems research at The Yankee Group in Boston.

In a statement that may be made separately during the American Association of Artificial Intelligence convention in St. Paul, Minn., the same week, DEC is expected to announce a VMS version of Prolog, a language used in AI programming.


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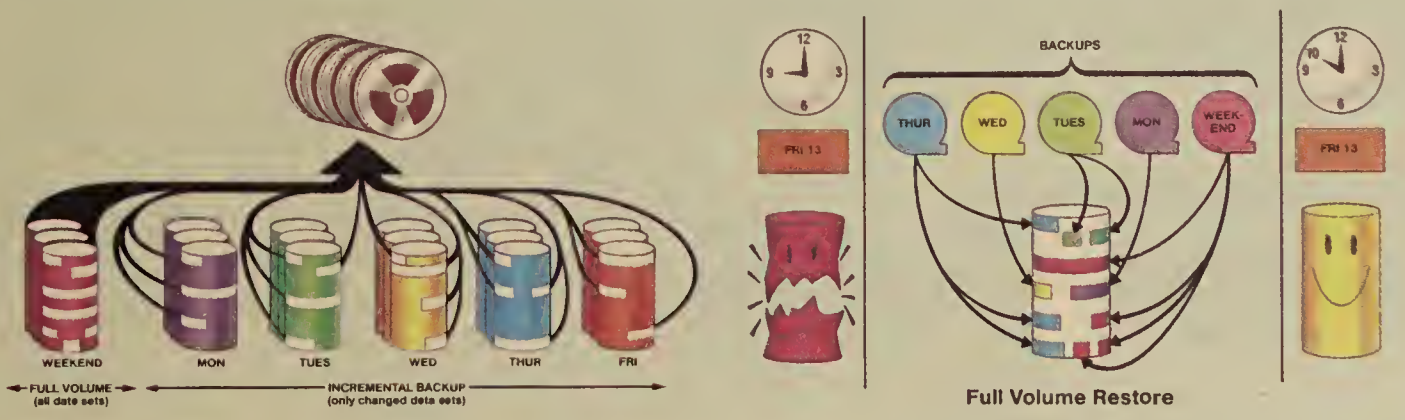


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# NEWS SHORTS

## American Express on digital wire

American Express Travel Related Services Co. has become the first U.S. user of the high-speed version of Integrated Services Digital Network (ISDN) offered over a public network. The company will use AT&T's ISDN service, which provides access to other AT&T offerings over the T1-like Primary Rate Interface. American Express will link to the service via AT&T System 85 PBX Advanced Networking Switches, which have been equipped with Primary Rate Interface cards and will be able to use automatic identification of caller numbers and special circuit allocation services.

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## Zenith reacts to memory drain

Zenith Data Systems is trying to skirt the shortage of dynamic random-access memory chips by reconfiguring its Z-386 personal computers and lowering their prices. Zenith has reduced the standard memory in its two Z-386 models from 2M to 1M byte and at the same time dropped the retail price by approximately 15%.

The company will continue to offer 1M- and 4M-byte upgrade kits. The Z-386 Model 80, with an 80M-byte hard disk drive, will now cost $6,399, down from $7,499. The Z-386 Model 40, with a 40M-byte hard drive, will now cost $5,499 rather than $6,449. And in mid-September, the Z-386 Model 160 with a 160M-byte hard drive will reportedly be available for $7,999.

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## National Semi thrust and parry

National Semiconductor Corp. in separate actions last week filed a trade secret misappropriation suit against competitors and pared down its Information Systems Group (ISG). The company alleged that Cypress Semiconductor Corp. and its subsidiary, Aspen Semiconductor Corp., conspired to steal trade secrets involving its advanced polysilicon emitter-coupled technology, Aspect, and other related technologies originally developed by Fairchild Semiconductor, which it acquired. A former Fairchild executive — Narpat Bhandari, also former president of Aspen — was accused of taking documents related to the chip-making method; neither Aspen nor Cypress responded to requests for comment. Friday morning, National Semiconductor announced the consolidation of the Datachecker Systems Division's marketing and engineering functions into one organization based in Santa Clara, Calif., shutting down efforts in Massachusetts and Phoenix. As part of the reorganization, which will pare the ISG work force by 450, the Datachecker Series 3000 retail system will be withdrawn from the market. The company reported that the moves will cost $18 million.

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## HP buys a voice

Hewlett-Packard Co. last week announced an agreement to acquire 10% of Octel Communications Corp., integrate Octel products with HP computers and electronic mail systems and distribute Octel products in Europe. HP paid Octel almost $14 million for 5% of the company's stock and will buy an additional 5% on the open market during the next 18 months, with the option to increase its holdings to 20%. Octel produces voice-processing systems.

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## Oracle touches all bases

Oracle Corp. completed its IBM mainframe lineup last week, announcing availability of its relational database under the DOS/VSE/SP operating system, which runs primarily on IBM 4300-series mainframes and 9370 mid-range systems.

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## Toshiba, Borland team up

Toshiba America, Inc. last week cut the prices of its portable T1200F and T1200FB computers by $300 and $200, respectively. The company also announced a deal with Borland International to bundle the Sprint word processing package in a special portable configuration. Additionally, Borland will sell Toshiba customers the interfaces and utilities found in the over-the-counter version of Sprint for an additional $39.95.

# AS/400's dual claims

*Advertising, customer letters split on support*

BY ROSEMARY HAMILTON
CW STAFF

Depending on what you read from IBM, its Application System/400 entry-level B10 system can support either as many as 12 users or as many as 30. And the top-of-the-line AS/400 can support as many as 150. But look again, and it is supporting 200 users.

The discrepancy results from two different sets of information published by IBM. The lesser numbers appear in its AS/400 customer letters, while the bigger numbers have shown up in IBM's glossy advertisements featuring actor Alan Alda.

An IBM spokesman said the customer letter figures are conservative estimates that were considered the safest numbers to use at the time of IBM's announcement. The larger numbers come from more recently completed testing within IBM, he said.

IBM has recommended that customers use the promotional figures as a guideline. In that case, the range of users supported by the AS/400 is one to 200, instead of one to 150.

Presented as the "typical number of concurrent users for each model," the customer letter figures actually represent the typical number of workstations in an office-intensive environment where users are frequently interacting with the system, the IBM spokesman said.

### Are you active?

*IBM advertising for the AS/400 boasts greater capability than technical specifications for typical use indicate*

| Model | Typical number of users | Number of "active users" |
|---|---|---|
| B10 | 4-12 | 25-30 |
| B20 | 8-20 | 40 |
| B30 | 12-30 | 50 |
| B40 | 24-48 | 75 |
| B50 | 36-80 | 115 |
| B60 | 64-150 | 200 |

CW CHART

### In-house test

The bigger numbers in the advertisement, which represent "active users," actually reflect the results from an IBM internal benchmark test, which simulates a combination of commercial applications in a "heads-down cranking-out mode," he added.

One independent consultant, Ernest Thiel at JCE, Inc. in Carson City, Nev., said he had been perplexed by the figures and found it difficult to recommend a system to a client. When he requested an explanation from IBM representatives, he said a more confusing explanation was provided.

If a customer with 30 users were to use the IBM promotional material as a guideline, he would consider the low-end model, the B10. But the B10, according to the customer letter, has a cutoff point of 12 users.

# IBM's air-traffic contract probed

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The federal government's Board of Contract Appeals, in a 45-day review of IBM's $3.6 billion contract for air-traffic control systems, is expected to focus on how IBM was able to underbid Hughes Aircraft Co. by roughly $500 million.

The appeals board is likely to concentrate on Hughes' charge that the Federal Aviation Administration (FAA) allowed IBM to supply used computers — contrary to the specification for new equipment, according to Andrew Mohr, a procurement expert at the law firm of Cohen & White.

Hughes filed a formal protest on Aug. 4 arguing that IBM benefited from that tactic and other unfair cost advantages and thus won the Advanced Automation System contract [CW, Aug. 1]. The appeals board, part of the General Services Administration, suspended the IBM contract last week until the review is completed.

"The Hughes protest is without merit and should be denied," responded an IBM spokesman who declined further comment.

Hughes also argued that its technical proposal was superior, but analysts said that contracting officers naturally favor the lowest price bidder when there is intense public scrutiny because of a rash of procurement scandals, as has been the case recently.

"In today's procurement environment, it's hard for government officials to ignore low price," said Eben Townes, a procurement analyst at International Data Corp.'s Washington division. "The more visible [the contract], the more conservative those selections tend to get."

### Roles misused?

Among other things, Hughes charged that IBM abused its role as both a prime competitor and a subcontractor to Hughes. In several cases, the prices IBM quoted for hardware and services to be supplied to Hughes were dramatically higher than the prices used by IBM's Federal Systems Division in its bid to the FAA, Hughes claimed.

On a line item for spare computer parts, for example, IBM bid $11 million but its price quote to Hughes was $223 million, the complaint said.

"That is normal, perfectly legal hardball from IBM, because they're obviously not going to give everyone else the same good price," Mohr said.

The Hughes protest contained several other allegations, such as the following:

- The FAA failed to conduct a "cost-realism analysis." The complaint suggested that IBM's price is unreasonably low and that actual costs to the government will turn out to be much higher.
- Hughes said its proposal was rated technically superior by an expert panel. It employed color raster displays, touch screens, a fiber-optic local-area network, and an open, flexible architecture to minimize the FAA's dependence on a single vendor for future upgrades, the complaint said.
- Hughes said the IBM system fails to meet the FAA's demanding requirements for reliability.

# High-tech call girls nabbed

BERKELEY, Calif. — Names and financial records of 42,000 customers of a call girl operation were confiscated last week along with eight multiuser minicomputers, a hard disk, a laser printer and color monitors.

The operation was said to be one of the largest ever investigated in California. Police estimated the operation brought in $3.5 million a year.

The evidence included one Hewlett-Packard Co. Laserjet printer, a Control Data Corp. hard disk, modems and a phone system with 30 incoming lines.

The operation relied heavily on packaged software, according to police.

Known as Cloud Nine Escort Service, the operation was in contact with 80 working women through telephone pagers. Police said about one-fourth of the calls were in hotels in the San Jose/Silicon Valley area. The average cost of a visit was $200.

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ORACLE also set the record for DEC minicomputers by running 49 TP1 tps on a VAX 6240 running VMS. This breaks the previous VAX/VMS record of 29 TP1 tps set on a VAX 8700 connected to a VAX 8800. Not only is ORACLE's performance nearly twice as fast as this previous record, but ORACLE's cost per transaction is almost four times better than that of the other system. And ORACLE's results were audited and verified by the Codd and Date Consulting Group.

ORACLE set a UNIX record of 110 TP1 tps on a large minicomputer from Sequent as well. These results were achieved processing a 1.1 gigabyte database containing 11 million rows of data. Once again, the results were independently verified by the Codd and Date Consulting Group.

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# Consultant asks $750M from bank for alleged swiped code

BY KATHY CHIN LEONG
CW STAFF

SAN FRANCISCO — A five-year lawsuit brought by an MIS consultant who claimed Bankamerica Corp. stole his source code is finally scheduled to go to trial Oct. 31 in San Francisco Superior Court.

The trial was originally slated for this month but was delayed due to an overloaded court calendar.

Gulab Tinmahan, president of Tinmahan Consultants, Inc. in Orinda, Calif., is asking $750 million in damages from the bank for allegedly keeping his source code and using it without his permission.

In November 1983, Tinmahan filed a complaint with the San Francisco Superior Court charging that Bankamerica would not return his source code, which was used for an application on the bank's electronic funds transfer network.

While the bank returned a set of code to Tinmahan, his defense attorney, Peter Levy, said the program was tampered with. "Certain codes were deleted to prevent access to files. It is completely valueless," he said.

When his consultancy for the bank ended in August 1983, Tinmahan did not receive the source code in its original form, he charged. He said he did not have a copy himself. However, Bankamerica attorney Frank Sommers said that the bank is not using the original version of the software.

Tinmahan alleged he has been ruined financially. While he has not filed for bankruptcy, he has picked up programming contractor jobs at local companies.

Sommers declined to discuss Tinmahan's charges but said the bank will vigorously dispute every charge he has made.


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# Lotus

FROM PAGE 1

now being set by King, who had been wooed for months by a Lotus chairman searching for someone to shape up the Lotus development process. As former vice-president of development for IBM's Entry Systems Division, King sports much-needed technical and management skills. While his regimen sits well with many developers craving order, it upsets another more unruly faction.

Salim joins a long list of resignations this year, such as Michael Kolowich, former vice-president of marketing; John Shagoury, director of sales and distribution; Donald McLagan, vice-president of information services; and Greg Jarboe, director of corporate communications, a post renowned for its revolving door.

Added to that list are the recently retired vice-president of manufacturing Palmer True and Randall Wise, former director of in-house personal computer services.

Last week also saw the departure of Conall Ryan. Ryan served as product manager for Agenda, a personal information manager that is just starting to get off the ground.

**Where's everyone going?**

But it was the news of Salim that prompted the question, "Why the bailouts?"

For one ex-Lotus employee, the culprit is the firm's growth. The big-company controls and procedures began to stifle the high-spirited Shagoury. "I woke up one morning and it didn't feel like a small company anymore," Shagoury said.

Another plausible explanation is simple economics: better job offers. Such turnover is "the nature of this industry," Jarboe explained.

In fact, Shagoury is now vice-president of Corporate Software, Inc., Ryan has joined Steve Jobs at Next, Inc., and Kolowich is the publisher of *PC Computing*, a new computer publication. He has been joined by Jarboe. And according to published reports, Salim may be joining Digate in an undisclosed venture.

"The timing is happenstance," Kolowich said, adding that the defectors are all entrepreneurial people seeking opportunities elsewhere. In addition, stock options for high-level employees matured last month, prompting many who have been considering leaving to cash in, Shagoury said.

For some, Lotus is just not the same company it was when freewheeling founder Mitch Kapor ran the show. With professional managers like Jim Manzi and fast-thinking execs like King running the show comes a new degree of pressure and a new agenda. "The old Lotus is gone," one Lotus developer source remarked.

While ego-bruising to some, the changes brought about by Manzi and King may ultimately create a stronger, more efficient Lotus and a better array of products for customers. "A lot of it is for the good," the Lotus source said.

While many of the departures have been largely ignored by Wall Street, Salim's resignation prompted speculation that 1-2-3 Release 3.0 would once again be delayed. According to a prominent Lotus watcher, the connection is entirely tenuous. "The guy was not a developer," explained Rick Sherlund, an analyst with Goldman Sachs & Co. Shagoury used stronger words to discount the rumor.

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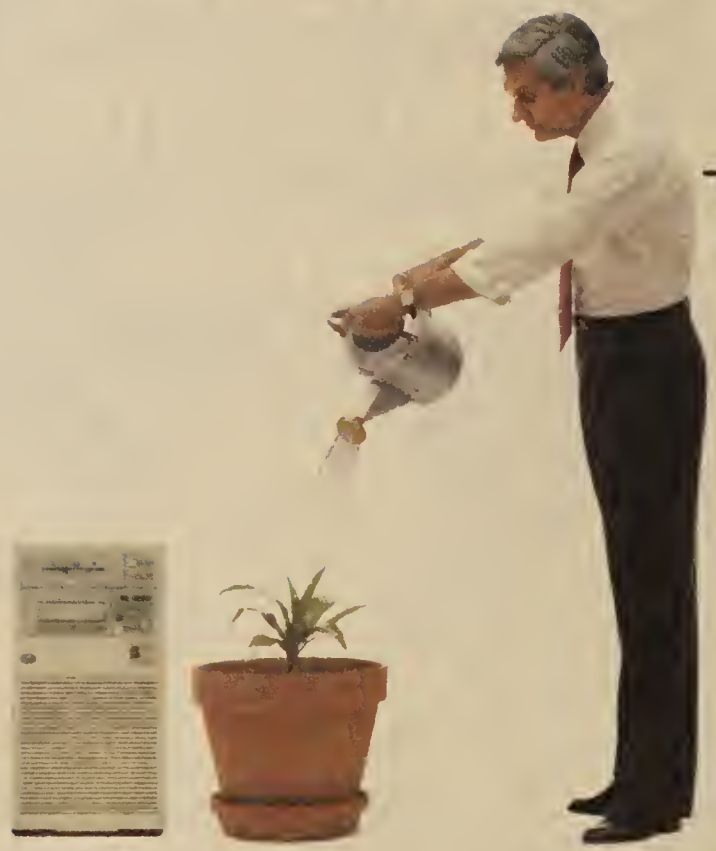

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# Perot preserves postal privilege

*Wording of new contract appears to open bidding for subcontracts only*

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Postal Service's proposed new contract with Perot Systems Corp., intended to mollify critics of the original sweetheart deal, may actually give Perot the premier role of systems integrator for the automation projects, industry sources said last week.

"That raises everyone's eyebrows," said Joseph T. Ruble, assistant general counsel for ADAPSO, a trade association whose members include competitors in the computer services industry. Ruble said ADAPSO is very concerned that Perot will automatically get the systems integrator role without competitive bidding.

Postmaster General Anthony M. Frank announced last week that the original sole-source contract with Perot Systems will be changed substantially in response to industry and congressional criticism.

The original contract generated controversy because it gave Perot Systems exclusive rights to design and implement various automation projects for at least 10 years [CW, June 27].

Under the revised contract, Frank said in congressional testimony, Perot Systems would identify cost-cutting projects but would not bid on the actual implementation work in Phase 2, which would be opened to competitive bidding.

The postmaster general said that in Phase 2, Perot Systems' role would include drafting specifications, technical evaluations of bids and integration and/or supervision of the cost-saving projects.

Ruble said that the language appears to describe a systems integrator or prime contractor role for Perot Systems, leaving only the subcontracts open to competition.

Perot Systems, based in Vienna, Va., was started in June by H. Ross Perot, the flamboyant Texas billionaire and founder of Electronic Data Systems Corp. (EDS).

At a hearing held by the U.S. Senate Committee on Governmental Affairs, Frank conceded that the initial contract was a mistake prompted by his eagerness to obtain the services of the legendary Ross Perot, whom he called a "can-do entrepreneur."

"My zeal resulted in the negotiation of a contract perhaps more typical of the private sector than the government," Frank said.

The initial contract was suspended July 8 as a result of official protests by competitors EDS — which is now a General Motors Corp. subsidiary — and Planning Research Corp. On Aug. 4, the General Services Administration's (GSA) Board of Contract Appeals ruled that the contract was illegal and void.

However, the Postal Service said that its computer contracts do not fall under the GSA's jurisdiction and that it is seeking a federal court ruling on the issue. Frank said it would not be prudent to begin work on the revised contract, which is currently just a verbal agreement, until the ruling is issued.

The proposed contract revisions were applauded by Sen. Carl Levin (D-Mich.), who co-chaired the hearing, but he added that the committee will be closely monitoring the new contract.

At the hearing, the U.S. General Accounting Office reported that the original contract was loosely written with provisions very favorable to Perot's company. It also failed to comply with the Postal Service's own procurement manual, the auditors reported.

Frank explained that he was attracted by Perot's management philosophy and expertise and by the expectation that the Postal Service would get special attention from Perot's new company at nonprofit rates.

# The Power of Automated Operations

# Researchers cast VDTs as vision villains

BY J. A. SAVAGE
CW STAFF

OXFORD, Ohio — Researchers have found a "compelling" incidence of eye-focusing problems in VDT users who are in their 20s and 30s. This and other reports of physical effects and ergonomic solutions in the computerized office were made public last week at a symposium sponsored by the National Institute for Occupational Safety and Health.

The clinical results were the second report this year suggesting that VDTs may have deleterious health effects [CW, June 13]. Other studies made public at the symposium included physiological strain and the effects of routine exercise.

Focusing turned up as the No. 1 problem for people in their 20s and 30s who work at terminals an average of six hours a day, leading to a prescription for reading glasses long before the normal age for such visual assistance, said James Sheedy, chief of the VDT Clinic at the University of California at Berkeley School of Optometry. The report was a compendium of clinical findings on 153 patients.

Of these patients, 27% had difficulty changing focus; their eyes took 56% longer than normal to focus from close work to distance and back again. Sheedy described them as "patients in their 20s and 30s who otherwise might not need a reading prescription." An older group that represented 26% of the patients was diagnosed as "presbyopic," or having a normal focusing loss expected for their age.

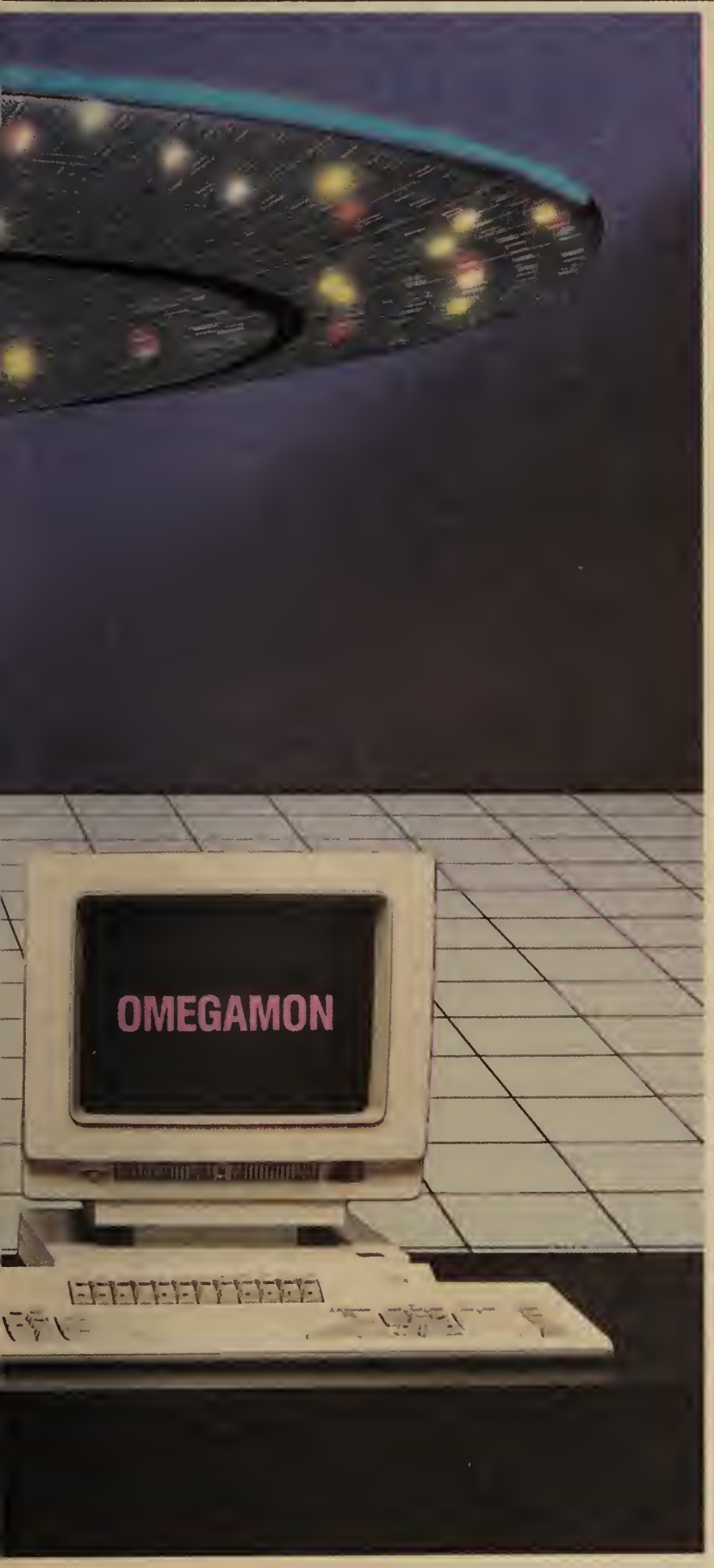
### Cause or effect?

"It's either the straw that broke the camel's back — that is, these people had marginal eye problems and after working at the terminals developed symptoms — or it's something with the VDTs that is causing the problem," Sheedy said. He is currently designing a study to address those questions.

"This study gives evidence to complaints long denied by employers and manufacturers on ergonomic standards," said Deborah Meyer, assistant director of 9 to 5, the National Association of Working Women. Standards would include fine-tuning flicker rate and character resolution, screen color, glare screens and light controls.

According to the Computer and Business Equipment Manufacturers Association, most of the eye problems can be blamed on light controls, "rather than blaming it necessarily on VDTs," a spokeswoman said. "Flicker-rate adjustments have already been made."

The debate at the symposium, "Promoting Health and Productivity in the Computerized Office," centered on the degree of implementation of ergonomics to ameliorate eye trouble and physiological problems, according to conference organizer Marvin Dainoff, who is also the director of the Center for Ergonomic Research at Miami University in Oxford. "The industry associations say they are implementing ergonomics, and the unions say industry isn't doing a good job," he said.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# New face

CONTINUED FROM PAGE 1

press rely on the ever-changing figures to track the majors' winners and losers. "Baseball has its own statistical uniqueness. It's amazing how something so straightforward can be so complex," said Barry Dounn, a systems engineering manager at IBM and one of the lead developers on the baseball system.

Although the system will have little direct impact on regular fans, it will provide sportswriters with more complete data sooner than is currently possible.

Statistics tracking every pitch to every batter in every game are tallied by each team on IBM Personal System/2 Model 30s, Personal Computer XTs and laptop PC Convertibles located alongside cigar-chomping sportswriters in stadium press boxes. IBM worked with baseball experts in the Commissioner's Office to develop software that could respond to the myriad quirks of the game.

### IBM foots the bill

A source at the Commissioner's Office said IBM, a sponsor of Major League Baseball, has footed the bill for most of the project, including the costly development from the ground up of the statistical software, service and support. Microcomputers at each stadium and a System/38 were loaned to the league.

Major League Baseball is also a customer of IBM's and has previously purchased equipment that includes a System/38. By hitting a couple of keys, a user can describe a play as everything from a runner being doubled up to a batter being hit by his own ball.

Box scores and team data on the boys of summer are distributed to the press immediately following each game, updating reporters on how a batter's average changed during the game or who is on a hot streak. Information from around the league is uploaded to a System/38 in New York, which crunches the numbers overnight with software designed to handle baseball statistics.

American League and National League totals — the same found daily in newspaper sports sections — are available to teams the next morning by 9 a.m. The numbers are confirmed by the Elias Sports Bureau, baseball's official statistics agency.

That is a far cry from the tedious approach taken by Major League Baseball in the past. Baseball games had been scored by hand on paper and telephoned into the head office until the late 1970s, when dumb terminals were linked to New York.

But the system was problematic, with

**Dodger** *Fernando Valenzuela lets fly*

no standard scoring criteria between the two leagues and separate companies administering each system. Today, the Baseball Information System contains such up-to-the-minute information as how left-handed batters hit against a particular pitcher — information that previously would not have been available until the end of a baseball season.

"The whole procedure is simple now, compared to what it was like before," said David Alworth, director of Baseball Information Systems for Major League Baseball in New York.

The system was tested during spring training and was brought up last April from the minors for the first pitch of the regular season for a tryout. While most teams reported few problems, system software has caught some scorers at their own mistakes.

For example, if the wrong player name is entered in a team's lineup, the scorer cannot correct the problem halfway through the game. Instead, the user has to go back and rekey the entire game. That resulted in a major-league headache for one scorer at a San Francisco Giants game who realized his mistake in the seventh inning of the second game of a double-header. Both games had to be rescored.

Baseball seems less concerned with bugs and more interested in exploiting more capabilities of the system. IBM's Dounn said the system is chock-full of information currently not being distributed to the teams.

As the system becomes a bigger part of Major League Baseball, code will be written to produce more detailed relational statistics for use by the teams and head office. "It's good, but it should get even better," said Michael Williams, director of publicity for the Dodgers.

But statistics are not infallible. Soto is wearing a Dodger uniform, thanks in part to the MIS system, but he has yet to throw a pitch for the team because of an injury that leaves him on the disabled list.

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## EDITORIAL

# Playing with fire

BOSTON-AREA DRIVERS pay the highest auto insurance premiums in the country. No, it's not just because many Hub drivers emulate Rambo behind the wheel. It's due to the staggering auto theft rate, and the corresponding indifference of the courts when it comes to actively enforcing laws designed to punish thieves.

The net result: Everyone who drives pays and suffers.

In the information systems world, we are courting great disaster as we rush toward enterprisewide networked systems. The sensitivity and strategic importance of the data that is resident on these networks will make them prime targets for intruders.

And, as in Boston, enforcement authorities appear apathetic when it comes to actively prosecuting and punishing offenders of what we once thought of as pretty tough computer-crime laws.

Last week, *Computerworld* highlighted the case of one Marcus Hess. This enterprising 24-year-old West German violated as many as a third of some 450 high-level U.S. government and military research systems such as Arpanet and Milnet.

Hess was caught cold. However, he not only went unprosecuted, but the personal computer with which and into which he downloaded purloined files was returned to him by West German investigators, its file contents unexamined.

While Hess' actions may have been unique, the action (or inaction) of prosecutors is not. Notwithstanding all the consciousness-raising that led to the enactment of state and federal anti-hacking laws, it is just too darned easy to find loopholes within those laws. The problem is that it's the prosecutors whom we now see as seeking out those loopholes — and then using them as excuses for not going more aggressively after hackers.

There's a more deep-seated fault that really lies at the heart of our seeming inability to cope with a potentially major criminal element. As a computer security consultant said about the Hess case, we need ethics, values and a society that cares.

To this point, hackers still enjoy the same elfish reputation brought to us by Hollywood in such epics as *War Games*; a bunch of fun-loving kids trying to put one over on the establishment.

And for the most part, this image is true to life. But speak to your database administrator or operations manager or network manager and see if they share this same view.

We have long advocated not only tougher anti-hacking laws but also enforcement of them. The reality, however, may just be that the world must await some cataclysmic disaster precipitated by a hacker before the problem is taken more seriously. Or, as will likely happen with the Boston-area drivers, the users will get fed up and take matters more aggressively into their own hands.

## LETTERS TO THE EDITOR

### One-sided

I am sick and tired of your moralizing.

I subscribe to *Computerworld* to keep abreast of the computer industry, not your one-sided political views.

If I want to expose myself to left-wing claptrap, I can read *The New York Times*. But at least that newspaper features writers who have opposing points of view.

At the other extreme, the conservative *The Wall Street Journal* often carries stories by far-left writers such as Alexander Cockburn.

Where are CW's opposing views? Where is the article stating that we should impose multilateral sanctions against the Soviet Union and China, since they are among the worst repressive regimes on earth, far worse than South Africa? Why are you attacking South Africa's indefensible policies [CW, June 20] without mentioning the Soviet Union's hand in the slaughtered millions in Afghanistan? And so on.

It is bad enough that you inject political opinions in your technical journal. It is much worse that you present only one side of the issue.

*Paul Belitz*
*President*
*Media Data*
*New York*

### Take the gauntlet

I was among the 100,000 or so people who attended the announcement of IBM's Application System/400 series [CW, June 27].

It seems to me that the AS/400 is potentially much more than an upgrade for System/36 and 38 users. It seems to provide us with IBM's look at the future — an architecture that could well become an industry standard for the next decade — or more.

The requirement for software companies like ourselves will be to provide efficient and highly functional systems to meet the needs of larger corporations on this midsize architecture.

*Thomas H. Roberg*
*Vice-President*
*Global Software, Inc.*
*Raleigh, N.C.*

### Check again

I am writing about the article on VDTs and miscarriages [CW, June 13]. Obviously, manufacturers and users are concerned about possible adverse effects.

There are, however, some methodological points to keep in mind.

First, miscarriages are fairly common, and their distribution will vary among groups by chance alone. Second, there are undoubtedly other factors that influence miscarriages, such as genetic disorders, stress, chemicals and possibly the use of drugs.

Other factors could falsely indict VDTs through a spurious correlation. For example, suppose that stress increased miscarriages and jobs that required a great deal of VDT use, such as that of commodities trader, were included in the study. The stress of a job would then, through correlation, show up as a positive correlation with VDT use.

As a technical point, the numbers in the table accompanying the story were just barely statistically significant. Given the number of studies on the possible association, the results of that study could well be a chance phenomenon.

*S. Stanley Young*
*Manager*
*Preclinical Statistics*
*Glaxo, Inc.*
*Research Triangle Park, N.C.*

### A package works

I found Robert Hargrove's article on budgeting for training [CW, July 18] to be quite accurate and straightforward. There is truth in the "timeliness of training" concept.

Once a student leaves a classroom, there is a steep fall-off in the quality and quantity of knowledge retained. One remedy for this is to offer the student a training package as opposed to a one-time course.

This package may involve a well-written course manual that can double as a reference manual, computer-based training software as a course supplement or one-day booster courses given three or six months after the original full-length course.

By offering students a training package as opposed to a one-time course, the training tool becomes more useful and cost-effective.

*Benjamin W. Hughes III*
*Associate Technology Center*
*Director*
*New York Technology Center*
*American Institute*
*New York*

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Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

# Imagining the worst and best

*IBM workstations with DEC databases with NEC channels . . . ?*

MARTYN ROETTER

One prejudiced European view of heaven describes it in terms of French cooks, Italian lovers, British policemen, German engineers and Swiss organizers.

In contrast, the other place is portrayed as a haven for German policemen, British cooks, Italian organizers, French engineers and Swiss lovers.

Similar stereotypes prevail in the information industry. How marvelous it would be to find a vendor that combined the marketing savvy of IBM with the single-family product concept of DEC and then added the service of Hewlett-Packard, the combined communications and computer expertise of NEC America, the huge cash reserves of Siemens and the public relations skills of MCI.

On the other hand, imagine the nightmare if you were forced to combine the engineering workstations of IBM in a computing-intensive environment with the database management capabilities of DEC, offered through the distribution channels of NEC and dependent on the technological innovations of MCI, the entrepreneurial initiatives of Siemens and the computer products release schedules of HP.

However amusing or outrageous these stereotypes may be, are they correct or useful? Do they indicate to vendors and their customers pitfalls to avoid and strengths to build on?

Or are they in their own small way as harmful to a proper appreciation of the benefits derived from diverse vendors as racial or class stereotypes are in the formulation of social policy?

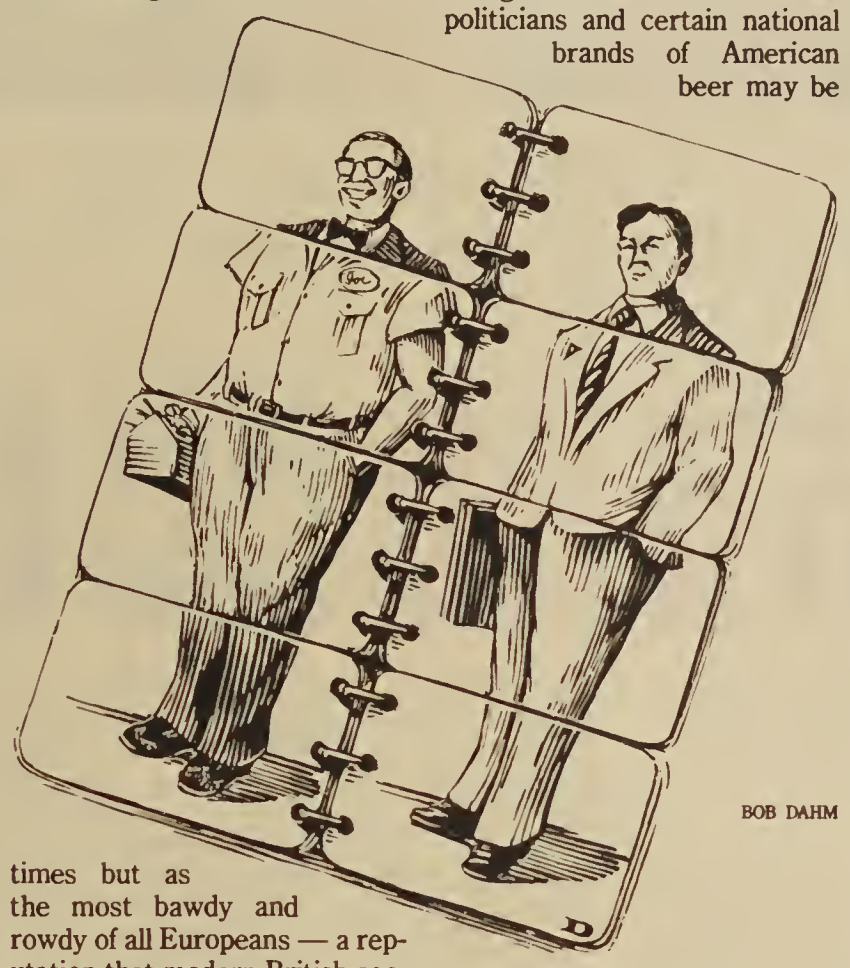
Probably not. Provided it is recognized that these stereotypes are the results of actions and choices made by companies in the past and can be changed over time, both the customer and competitor can gain insight from examining the stereotypical strengths and weaknesses of certain information technology vendors.

Customers may be led to identify the key questions that they should ask each potential supplier in order to ensure that they gain a proper understanding of the pitfalls as well as the advantages of each one's offerings.

In contrast to national or racial stereotypes, which may be defined by the dominant culture, the information technology business is still sufficiently dynamic and competitive. Thus, any company image that emerges from the overlapping perspectives of suppliers, customers, partners and even consultants is likely to have a kernel of truth embedded in it.

Furthermore, like a nation's image, a vendor's stereotype can be consciously changed.

In the 18th century, the British were not regarded as the reserved, inhibited caricatures that emerged from Victorian times but as the most bawdy and rowdy of all Europeans — a reputation that modern British soccer fans may be reviving.



BOB DAHM

And before the Franco-Prussian War of 1870, it was the French who were feared as the efficient military machinists and the Germans who were derided as a collection of quarrelsome and disorganized petty principalities.

It is, of course, true that stereotypes, even if accurate, reflect only part of the truth. IBM may be known as a marketing company, but its products are at least adequate in many circumstances and excellent in some.

Marketing a product that offers little capability or value is not likely to be effective (although the successes of some politicians and certain national brands of American beer may be exceptions to this rule).

Equally, an excellent product of which no one is aware cannot be expected to sell. A stereotypical strength needs to be backed up by minimum — or better — levels of competence in other areas.

Depending upon the circumstances of the customers and markets being addressed, a company may find that its stereotype is an asset or an obstacle to success. It may need changing, or it may simply need to be expanded or added to.

Honeywell Bull is now seeking to change its image to reflect the customer, rather than a computer-centered firm ("Our biggest assets are our customers").

In contrast, Data General, having apparently failed in its attempt to become a leading vendor of systems and solutions to large corporate customers, is refocusing its traditional role as a very competitive supplier of hardware platforms to OEM and value-added reseller channels.

NCR has successfully established itself — or reestablished itself in view of its 19th century origins — as a supplier of solutions to specific customer categories (retail, for example) and shed its image as an also-ran mainframe vendor. These examples of stereotypes may not find universal agreement.

Before protests break out from companies feeling unfairly treated — or their competitors presented to favorably — there are two final comments that stereotyped vendors may find comforting:

- It is usually better to be talked about, even critically, than not to be talked about at all.
- The health of the overall information systems market depends on the combined strengths of different vendors.

Roetter is manager of the information and telecommunications industries unit at Arthur D. Little, Inc. in Cambridge, Mass.

# The office curmudgeon: a diamond in the rough

JOHN BARNES

I call them undervalued veterans. This is someone who is a genuine expert in his field but whom people seldom listen to.

He is usually a tremendous unexploited resource, a wonderful store of experience and expertise with a gut-level understanding of what is actually going on. Is it possible that you have such a person in your MIS shop — someone you aren't using to the fullest potential?

Here are some of the marks of the undervalued veteran:

- His work seems extremely demanding and complicated, yet his reports are laconic. "We got it working again" or "It went out on time, but we had to push a little" might be all you hear.
- Chances are he got into computers through some irregular channel a long time ago. He often has the least formal education of anyone at the same level in the firm. This may partially explain why someone who has been doing a demanding job consistently well has never been promoted.
- An undervalued veteran hates meetings and hates them for constructive reasons. Undervalued veterans would rather be doing their jobs than discussing them. They often find reasons not to attend meetings. When they do attend, they put most of their efforts into getting out the door and back to their jobs.
- Probably because they are undervalued, many of them have intellectually demanding hobbies to which they devote most of their free time. Their offices or desks may be decorated with anything from tournament results of the U.S. Chess Federation to tiny hand-built working model steam engines to ham radio QSL cards.
- Undervalued veterans are frequently loners. When they socialize with co-workers, they tend to socialize oddly, often with people considerably above or below them in corporate rank. They seldom talk about work at lunch or at company gatherings and tend to choose friends they consider to be interesting people rather than politically helpful contacts or peers.
- They tend to be well-read outside the computer field, often attracted to history, politics and the natural sciences.
- Often they are described as sour or as having attitude problems and having hostility to new ideas. Not every cranky curmudgeon is an undervalued veteran, but many undervalued veterans come across as cranky curmudgeons.

Some might say this personality develops because the veterans are undervalued or that it is because bright, idiosyncratic people who can't or won't play up to the boss — people too valuable to fire and too unpleasant to promote — tend to become undervalued veterans.

**Cold shoulder treatment**

Ignoring them seems to be a common vice among recently hired MBAs, probably because undervalued veterans don't respond well to any theory of management or motivation. These people just want to do their jobs well, and they will do them well if left to themselves.

They are also carrying around a big part of the corporate knowledge base in their heads. If you know how to tap into that accumulated wisdom, it can be a tremendous advantage.

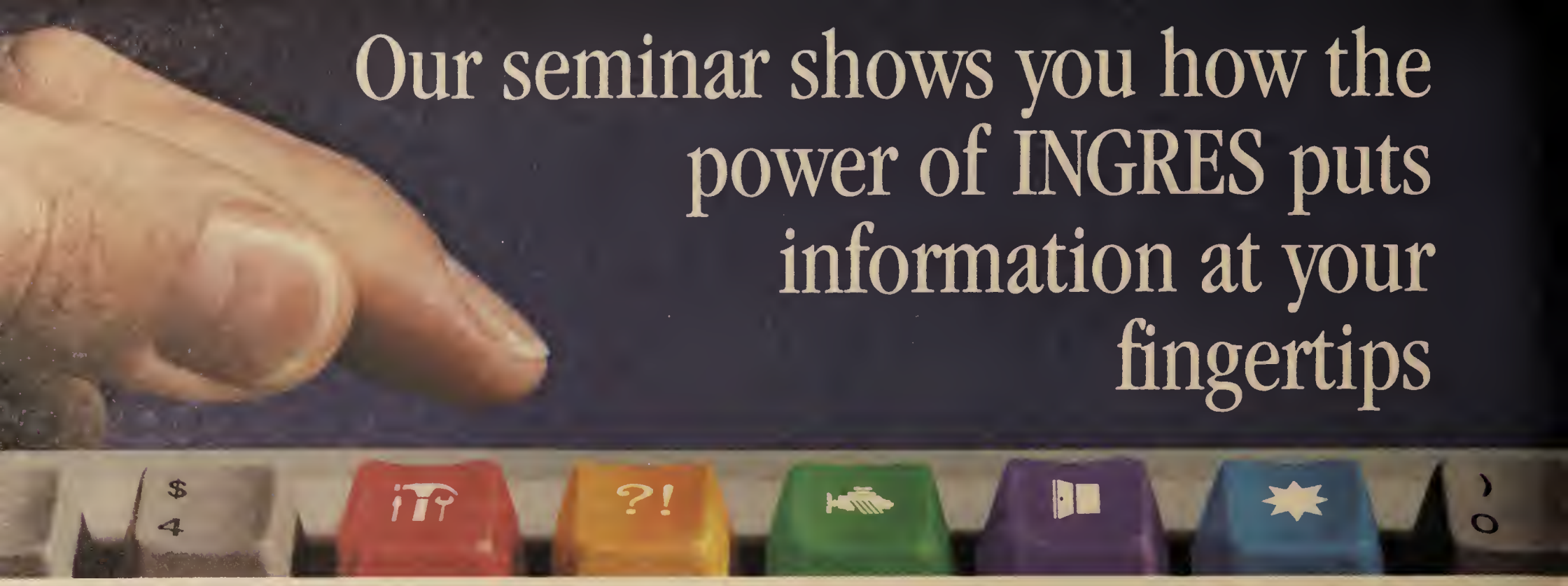
The undervalued veteran can be used as a private back channel of information. If asked, he can provide you priceless oral history on what actually, as opposed to officially, was the basis for long-ago decisions and designs.

Most of the undervalued veterans hate to write, even though they can potentially write very well. They suspect that their written reports are being ignored. You will almost always get more information from them face-to-face. Even when they do write reports, take time to talk the report over with them. You will be surprised at how much more you learn.

These veterans make perfect devil's advocates. If there's something you don't like about an idea but can't put your finger on, get his off-the-record comments. He has a keen nose for stupidity, blindness and impracticality. If you need a new area researched and capsulized, consider putting your undervalued employee on the job. His curiosity, self-motivation and ability to see the big picture makes him very good at that sort of job, and he won't waste your time with more of a report than the material justifies.

If you have just identified an undervalued veteran, you may need to spend a while listening to his complaints of years of neglect or mistreatment. Try not to be bothered if the undervalued veteran doesn't seem to like you. These people are workers, not smilers.

Barnes is the Pacific Northwest area manager for ADG, a high-tech marketing organization based in San Pedro, Calif.



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SOFT TALK

*James Alterbaum*

# Source code trade-offs

If enacted, recent proposed federal legislation will benefit software users and providers alike by better defining the rights of licensors and licensees in the event a software company goes bankrupt.

In the best of all worlds, the user of a custom-made software package would like to have available the source code, or actual machine-readable information, setting forth the mechanics by which the software operates. Most companies, however, refuse to part with the code unless they desperately seek to obtain the account of the licensee involved.

If the licensor relinquishes the source code, it risks losing the proprietary trade-secrecy rights associated with keeping the code confidential. By the same token, if the licensor fails to maintain the code or, worse, goes out of business, the licensee will not have the raw material to modify and maintain the program.

To balance these interests, legal practitioners have devised a solution called source code escrow, by which the code is placed in escrow with an independent third party pursuant to a written agreement signed by the escrow agent, the licensor and the

*Continued on page 26*

# Benchmark effort close to goal

*Industry falls in step behind Serlin's drive for standard-setting council*

ANALYSIS

BY NELL MARGOLIS
CW STAFF

"Benchmark" is getting to be a four-letter word — not in Webster's, maybe, but among database management system users who count on them for some indication of performance.

Omri Serlin, president of Itom International Co., a Los Altos, Calif., market research firm and publisher of the "FT Newsletter," said last week that he does not kid himself that he can change all that but added that he thinks he is taking a step in the right direction. Last week, his attempt to spearhead an objective, industrywide benchmarking organization — work that has been in progress off and on for four years — took formal shape as the Transaction Processing Performance Council.

"Something has to be done to stop the confusion surrounding benchmarks," Serlin said. "We have to let end users have some objective, comparable standards to use."

**One for all?**

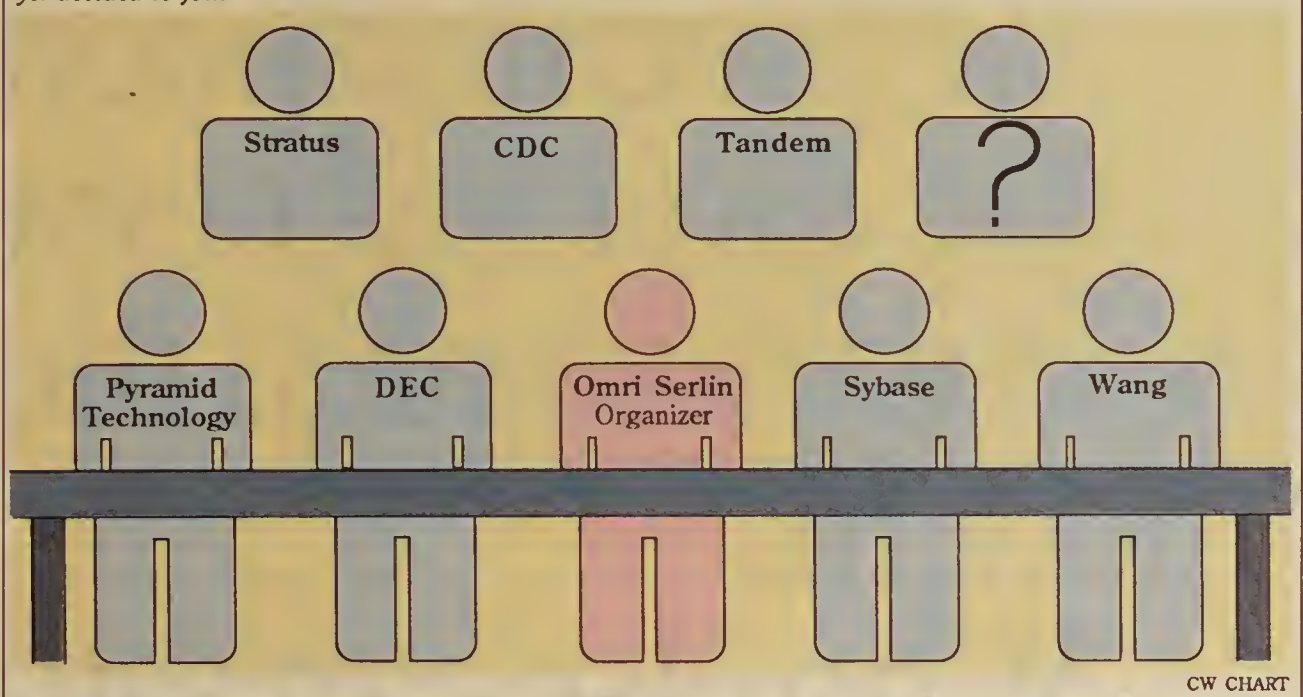
The fledgling Transaction Processing Performance Council will attempt to create and apply a standardized version of the Debit/Credit benchmark. Nominally an objective standard for gauging the performance of online transaction processing-oriented database systems, Debit/Credit and its more loosely defined derivative, TP1, are currently capable of meaning different things to different vendors — and, consequently, less and less to users.

Some of the loudest voices in the industry apparently agree: Charter members of the new council include Digital Equipment Corp., Control Data Corp., Pyramid Technology Corp., Stratus Computer, Inc., Tandem Computers, Inc., Sybase, Inc. and Wang Laboratories, Inc.

*Continued on page 28*

## Transaction Processing Performance Council takes shape

*Serlin called for five companies and got seven; Oracle, Relational Technology, Informix and others haven't yet decided to join*




# Alliant ties power to visuals

BY NELL MARGOLIS
CW STAFF

ATLANTA — Striving to stand out from embattled minisupercomputer vendors, Alliant Computer Systems Corp. recently rolled out a line of multiuser visualization systems capable of simultaneous high-performance computing and graphics.

The Visualization Series is the first fruit of Alliant's recent merger and longer term alliance with Raster Technologies, Inc. It uses high-speed shared memory to tightly integrate Alliant's FX/Series parallel vector machines with Raster's three-dimensional graphics and animation technology.

"The ability to tightly integrate high-speed computing with high-power graphics and the fact that these are multiuser rather than single-seat systems, are Alliant's true claims to uniqueness," said Gary Smaby,

*Continued on page 28*

## Inside


- Neural networks enter the marketplace. Page 25.
- Illinois college breaks in CDC VAX tool. Page 25.
- Printer price undercuts networking market. Page 25.
- MAI Basic Four adds some speedy multiuser systems. Page 25.



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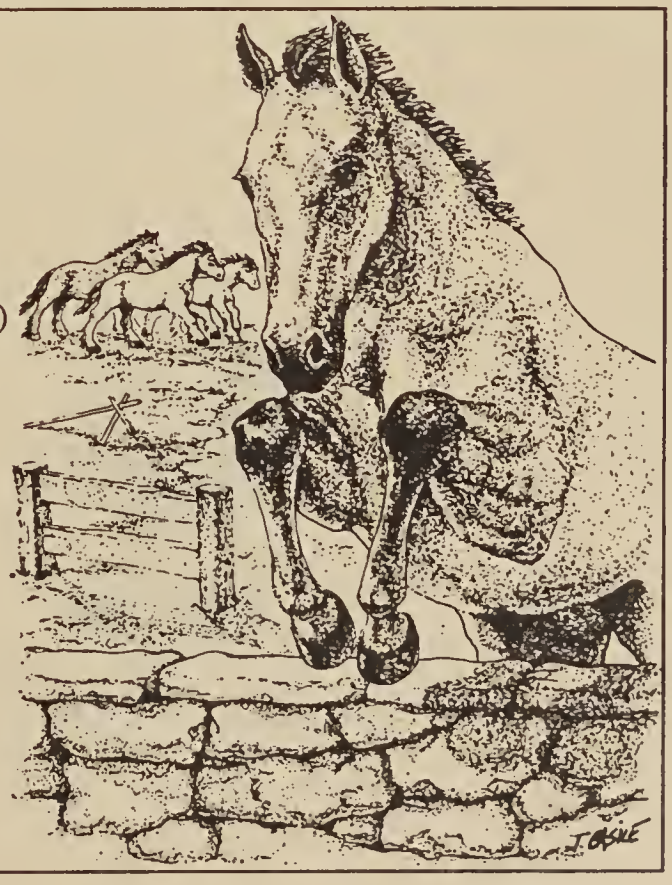

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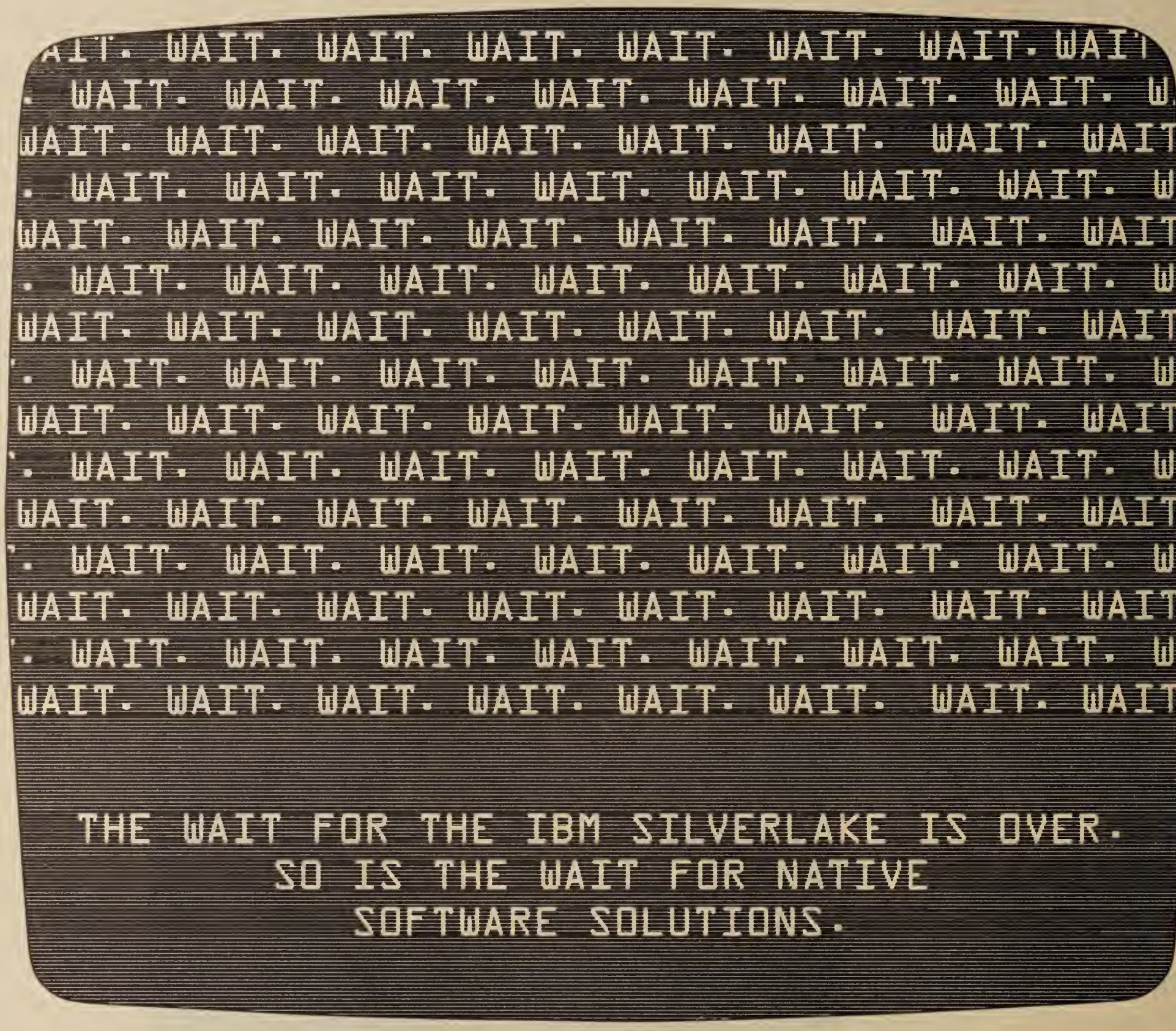


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# Laser-quality printer from Printronix bows

BY JAMES A. MARTIN
CW STAFF

IRVINE, Calif. — Printronix, Inc. last week unveiled a 24 page/min. LED printer said to offer laser-quality text and graphics for personal computer networks and minicomputer work groups at a price that is less than competitive laser printers.

The Report Expeditor, available now for $15,500, is said to offer the same resolution — 300 dot/in. — as laser-quality printers but without the component degradation that can occur with laser printers.

The printer is to be positioned as a medium-speed page departmental alternative to multiple desktop laser printers for such applications as word processing, speadsheets, accounting reports and presentation graphics, the company said.

"Desktop lasers are too expensive to be used as little as they are," said Joe L. Marolda, vice-president of marketing. "A single user can't churn out the kind of paper that would justify those costs, so in many cases it's better to go to a work group printer."

The printer is said to be the only one in its price range that has a straightforward paper path with original order stacking.

The printer, which offers Hewlett-Packard Co. Laserjet 500 emulation, comes standard with a 3½-in., 1.44M-byte floppy disk drive for easier font handling and improved diagnostic capabilities.

# Neural networks take limelight

*Commercial applications embrace AI offspring once in disfavor*

BY TORREY BYLES
SPECIAL TO CW

SAN DIEGO — Neural networks, long the stepchild of academic artificial intelligence projects, are finding their way more frequently into commercial applications, attendees claimed at the recent Institute of Electrical and Electronics Engineers, Inc. International Conference on Neural Networks, held here.

Last year's conference was more "a religious meeting," said Thomas Schwartz, a Mountain View, Calif., consultant on neural networks. "This year, it's serious business."

The systems were being evaluated, he said, for their ability "to fit into existing technologies."

Neural networks attempt to mimic the way neurons work in the human brain, picking patterns out of masses of seemingly unrelated data and matching them to patterns they encounter. They run on multiprocessor hardware, such as the Mark IV by TRW, Inc., and increasingly on single-CPU computers, including personal computers.

### Loan advisor

One commercial application is processing bank loan applications. Neural network software is exposed to many specific loan applications and repayment histories. The network is able to discover correlations between borrower characteristics and repayment records and then apply them to future applicants.

One vendor creating a neural network application is Hecht-Nielsen Neurocomputers, Inc. in San Diego. The company is completing a credit card analysis system for Avco Financial Services in Irvine, Calif., according to company spokesmen.

Global Holonetics Corp. in Fairfield, Iowa, demonstrated a machine-vision system for assembly-line quality control. Called Lightware, the system captures a video image of a product moving down an assembly line, called a signature. After being "trained" by being exposed to 300 correctly assembled units, it is able to identify incorrect assemblies, company spokesmen claimed.

Global Holonetics President David Clark said his company is beta-testing the system with three companies in the bottling

*Continued on page 26*

# MAI Basic Four adds five models

*Claims performance doubled with transaction-oriented line*

BY J. A. SAVAGE
CW STAFF

TUSTIN, Calif. — MAI Basic Four, Inc. recently introduced five models, claiming the firm has doubled the performance of its multiuser, transaction-oriented systems.

Based on Texas Instruments, Inc.'s ACT 8832 processors, the AS series systems are scheduled for delivery next month.

The high-end AS-63 performs at an estimated 30,000 transactions per hour, and users can attach up to 256 serial devices to the machine, according to Richard H. Rubin, MAI Basic Four's vice-president of marketing.

"We measured a four-second response time around the 140-[user] range," Rubin said.

### Target users

The computers, which use a new release of the vendor's proprietary Boss operating system, are aimed at transaction-based, account-focused businesses such as the hospitality industry; wholesale and retail businesses; and the manufacturing and transportation industries, Rubin said.

A typical AS-63 — featuring three CPUs, 4M bytes of main memory, 52 serial ports, a disk and printer controller, a 621M-byte hard disk and a magnetic tape controller — is priced at $252,000.

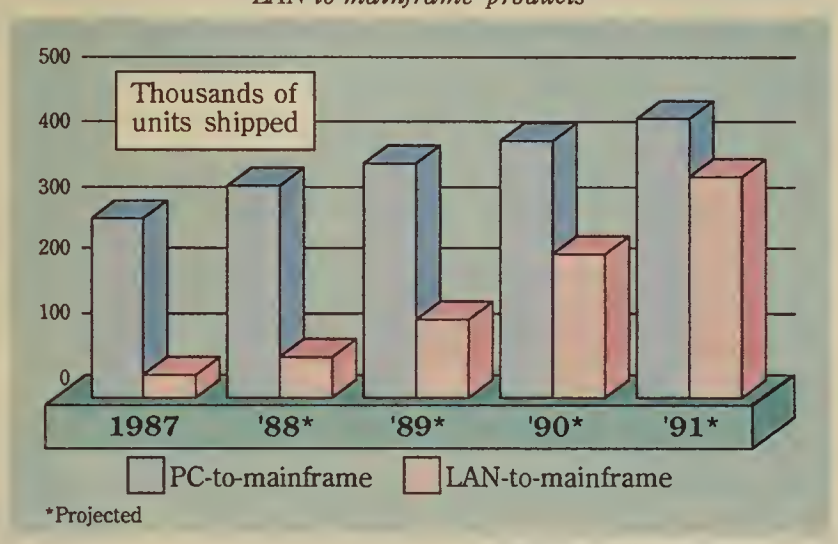
At the low end, the AS-41 runs at about 7,000 transactions per hour, with one CPU, 4M bytes of main memory, 20 serial ports, a 300M-byte hard disk and controllers. It costs $72,000.

Earlier generations of computers offered by MAI Basic Four have been based on Advanced Micro Devices, Inc. chips in addition to modified reduced instruction set computing technology.

## Data View

Improved technology elevates 3270 emulation product demand

*Shipments are climbing for both PC-to-mainframe and LAN-to-mainframe products*




SOURCE: INTERNATIONAL DATA CORP.
CW CHART

# CDC monitor tracks college VAXs

BY JEAN S. BOZMAN
CW STAFF

JOLIET, Ill. — At a small liberal arts college here, one of the few non-DEC preventive maintenance tools for VAXs is providing a user with system performance data and error logs.

Since March, the College of St. Francis has been testing Proact, from Control Data Corp. It is available only to CDC maintenance subscribers, such as the college, and is priced at 5% to 15% of the customer's maintenance bill. CDC began shipping it to other subscribers in July.

"Proact is more than a tuning tool," said Arthur F. Scheuber, director of data processing at the college. "It automatically monitors the systems, and it could actually alert us to a problem with a phone call."

The phone call would be made via Dectalk, a Digital Equipment Corp. software package that converts electronic messages into speech through voice-synthesizer chips. (Dectalk is already used to page DEC technicians' beepers.)

Proact is CDC's answer to DEC's Vaxsim Plus, a preventive maintenance program that uses expert system technology. A key feature of Vaxsim Plus is its ability to track disk-drive performance and predict future failures based on performance patterns. When a telltale pattern arises, a disk can be taken off-line before any actual failure occurs.

**St. Francis' Scheuber**

Although Vaxsim Plus is included under DEC's maintenance agreement, CDC's Proact is priced separately.

Scheuber, whose shop consists of two VAX-11/750s and one VAX-11/780, has a DP staff of seven. Using Proact, he said, frees his staff from having to monitor the systems from a console. "It's costly to throw people at a problem," Scheuber said. "We're a private college, so we have fewer funds for operators and programmers than other VAX sites."

The entire shop is so compact that it was moved two weeks ago into the refurbished basement of a student dormitory.

Proact allows users to set thresholds for certain types of hardware and software errors. Should the thresholds be exceeded, operators are alerted and given the option of taking the failing system component off-line.

Or, the system can be instructed to take the failing device off-line automatically, if necessary.

"If a disk drive is logging errors at 2 a.m., you can program Proact to call CDC maintenance before the disk drive actually fails," Scheuber said.

### More maintenance?

Andy Michuda, marketing manager for CDC's DEC maintenance support business, conceded that, with Proact, CDC maintenance may be called more often for repairs.

"We are moving down a path to provide services beyond the traditional box-fixing services we've had in the past," Michuda said. "Our survey of the market in 1987 showed that VAX systems managers wanted more systems monitoring tools. They know the capabilities of VMS and its utilities. Now, they want to be able to extract that [performance] data and to make use of it."

Proact is currently offered in two versions, Proact 1000 and Proact 2000. Proact 1000 includes system monitoring, Decnet monitoring and enhanced system security features. Proact 2000 adds statistical tools to compare the performance of multiple VAXs in a network.

This function goes beyond maintenance and assists users in managing their systems.

CDC said additional modules beyond Proact 1000 and Proact 2000 will be released. Future capabilities may include tools to tune an entire Vaxcluster, Michuda said.

# Alterbaum

FROM PAGE 21

licensee. Under this agreement, the source code is kept in escrow and cannot be touched by the licensee unless the licensor commits some act of bankruptcy; if this happens, the escrow agent will turn the code over to the licensee.

Because the federal bankruptcy laws give trustees in bankruptcy wide latitude to accept or reject contracts, some courts have upheld trustees' decisions to reject the license agreements on the grounds that obligations still need to be performed on the part of the licensor and/or the licensee — that is, the contracts are executory.

In *Lubrizol Enterprises* v. *Richmond Metal Finishers,* the 4th U.S. Circuit Court of Appeals sanctioned the decision by a trustee in bankruptcy to reject an executory license agreement involving certain technology in the metal coating industry.

An analogy can be made to license agreements in the software industry. The *Lubrizol* decision was, in fact, relied upon by the Bankruptcy Court in a case in which the debtor, Logical Software, Inc., was in the business of licensing software.

The agreement at issue was clearly executory, and the licensor and licensee had a history of ill will. The Bankruptcy Court upheld the rejection of the agreement as a sound business decision by the trustee.

The uncertainty created by the *Lubrizol* and *Logical Software* decisions resulted in a bill introduced in August 1987 by Sen. Dennis DeConcini (D-Ariz.). If adopted, the bill would amend the Bankruptcy Code to make clear that the escrow agreements should be honored. This would, in effect, create certainty in an uncertain legal environment.

The bill, which has been sent to the Senate Judiciary Committee, is still under review.

Alterbaum is a partner at Parker Chapin Flattau & Kimpl, a law firm specializing in computer law with offices in New York and Washington, D.C.

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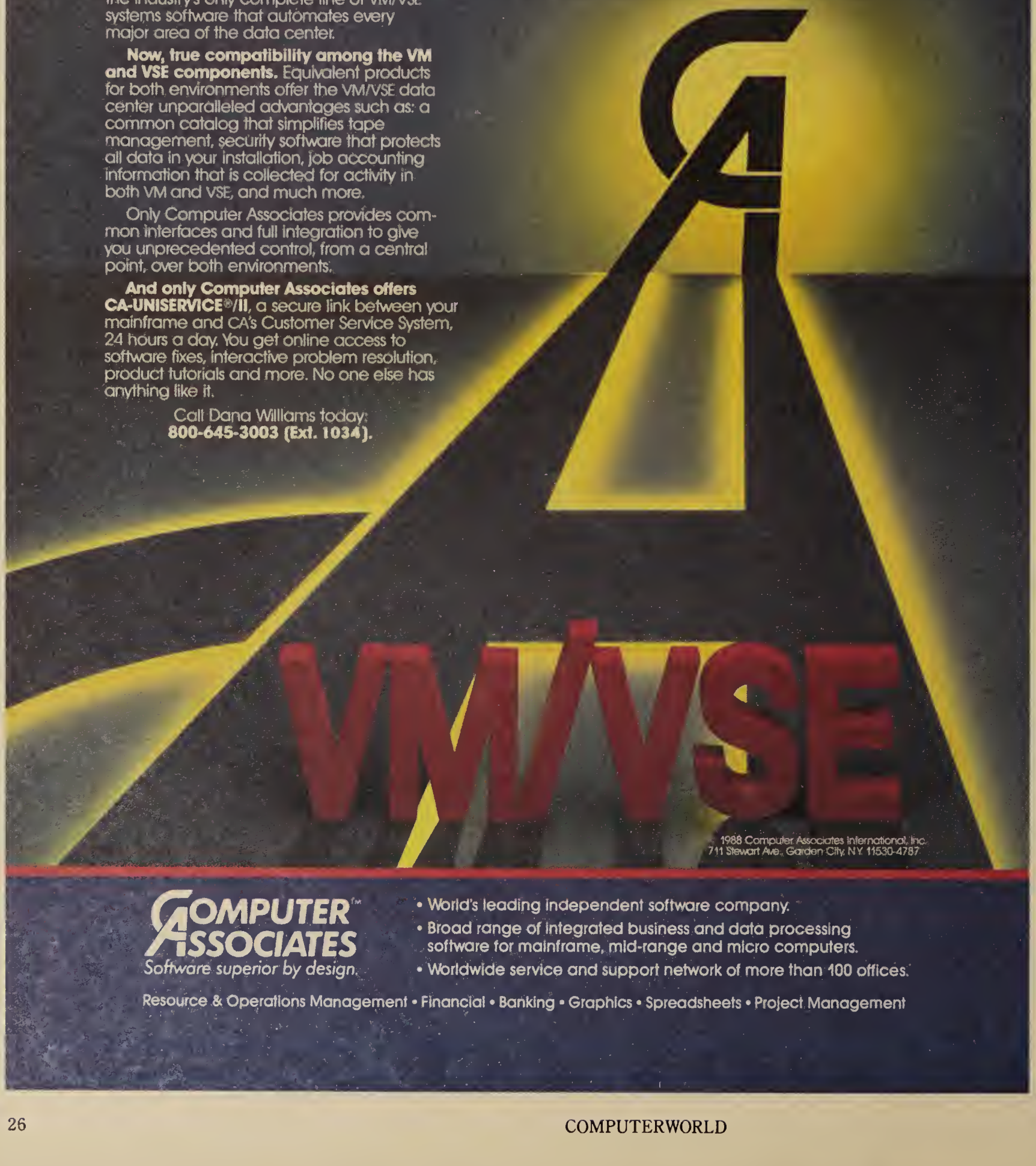


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# Neural

FROM PAGE 25

and food packaging industries.

Excalibur Technologies in Albuquerque, N.M., makes a text retrieval system based on pattern recognition rather than key word searches. With this approach, key words can be misspelled or run together without spaces, and the system will still find the targeted text.

The system can do fuzzy searches as well, a process by which it finds items conceptually related to an inquiry by matching character patterns to a master index of patterns for the whole text, company spokesmen said.

### Booking and trading

In a similar vein, Nestor, Inc. in Providence, R.I., is helping investment house Morgan Stanley Group, Inc. in New York develop an equities trading program based on neural networks. The system is fed historical stock market data and then analyzes it for patterns, Nestor officials said.

William Hutchison, president of Behavheuristics, Inc. in Washington, D.C., displayed a system that was designed to analyze the booking of airline seats on the basis of a wide range of data, including flight time, route, competition, historical demand and cancellations.

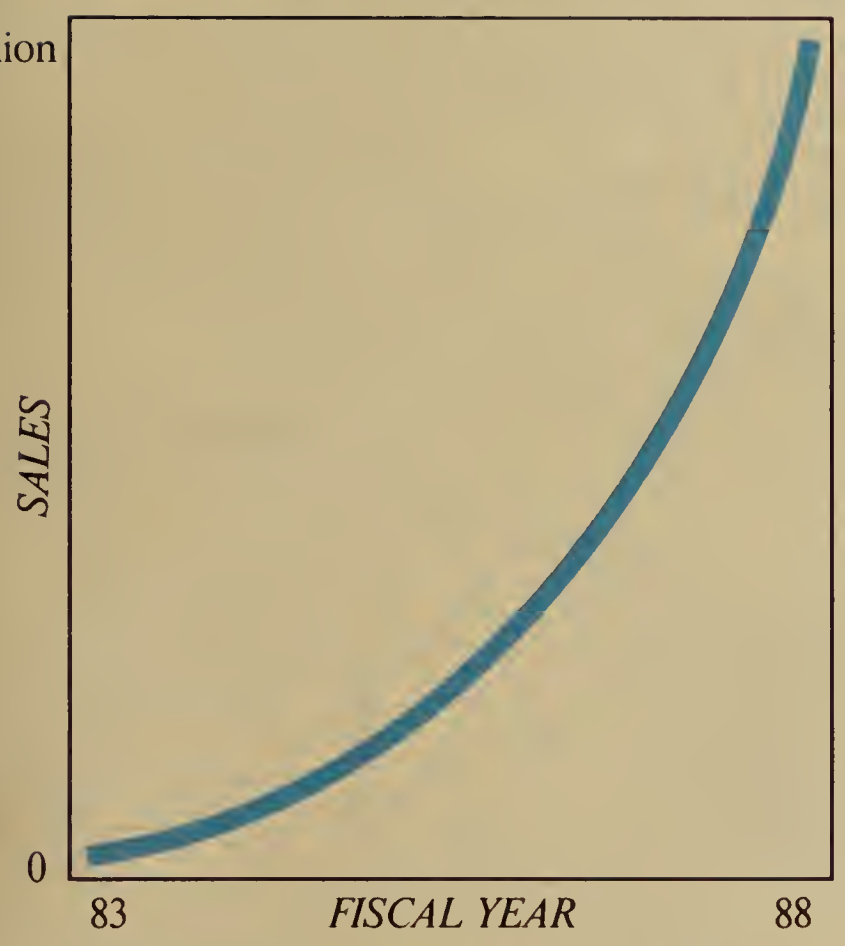
It then recommends to the marketing specialist optimal booking levels. The $450,000 product, called the Airline Management Tactician, is being looked into by several airlines, Hutchison claimed.

MIT professor Marvin Minsky, who at one time panned neural networks in a book written on AI, was the keynote speaker and took the occasion to eat a little crow.

"There were statements in the book . . . which were probably wrong. I was mad at the people [who advocated AI neural networks] . . . I can't believe that I thought that [way]," he said.

Byles is a free-lance writer based in Long Beach, Calif.

# It pays to be open.

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# Alliant

CONTINUED FROM PAGE 21

the research managing director at New York-based Needham & Co.'s Minneapolis office.

"By going straight from memory into the monitor, Alliant eliminated the network," he said, calling it an immense benefit to users. Currently, "they're taking data through a straw instead of a storm sewer," he said.

According to Alliant, the four-model Visualization series is about to ship to beta-test sites and is slated for commercial availability in early October. The product is aimed at scientific and engineering teams tackling such complex, simulation-oriented problems as aircraft design, the study of the earth's atmosphere and battlefield management.

According to Alliant, application performance levels can reach a 377 million floating-point operations per second (MFLOPS) mark and graphics performance can reach 640 MFLOPS. For single users who want visualization, Alliant will offer a stand-alone superworkstation based on Sun Microsystems, Inc.'s Sun-4 and Raster's GX4000 graphics accelerator, which is software-compatible with the Visualization line.

Along with the promise of the new computers, Alliant introduced a graphical menu-based software package for interactive visualization and analysis of 3-D data sets, which is available immediately.

"The market exists," said Dataquest, Inc. senior analyst Gregory Kosinski. Survey work at Dataquest, he said, "strongly suggests that users of minisupers are already doing . . . visualization. They may not be doing it optimally, but it's already got the attention of a number of users. In fact, I believe that visualization will become a checklist item, from workstations up to Crays." However, Kosinski added, "That's up the line; it isn't now."

### A learning process

At this time, Smaby said, "there's a missionary process that needs to take place. Most users aren't graphically literate, and they don't want to be. They don't think in terms of shaded polygons; they think in terms of their own work product."

Comparing visualization with word processing and spreadsheets in their pioneer days, Smaby pointed out that "the compute capability and software to do this kind of thing didn't even exist a few years ago. It's going to take some time for customers to get used to the idea."

Also, "there's the risk that the visualization field will get as crowded and confusing as the minisuper field has," Smaby said.

The crowds may be gathering already. "Stellar and Ardent are developing in this direction," Kosinski said, "and I wouldn't discount Apollo by any means." Alliant, he said, is betting heavily on having "exactly the right formula" at precisely the right time.

What's more, Alliant, coming off several rocky fiscal quarters generally attributed to overcrowding in the minisuper market, is "entering into uncharted waters at a time when they don't command a very high confidence level," Smaby commented.

"Clearly, they have the balance sheet resources to bring this venture off — they raised a lot of money through their public offering and through debt financing — but their earnings visibility is limited." Smaby predicted a profitable Alliant in the fourth quarter.

# Benchmark

CONTINUED FROM PAGE 21

"If I ever had any worries about getting this off the ground, they're well behind me," Serlin said.

The list is likely to grow, and quickly. "We told Omri we'd join as soon as either of our most direct competitors, Tandem and Stratus, do. Regardless, we'll join by the end of the year," said Andy Mallgol, a spokesman for Marlboro, Mass.-based fault-tolerant computer vendor Sequoia Systems, Inc., which will not have to wait for winter to sign on.

Both Oracle Corp. President Lawrence J. Ellison and Relational Technology, Inc. Chairman Gary Morgenthaler have endorsed the idea of an objective, independent benchmarking council; however, neither company has formally joined at this time.

### The first few steps

The council's first step, according to its founder, is to approve a slate of bylaws, which Serlin said he plans to submit within the next several weeks. Then it will move on to the first substantive task on the agenda: acting on an already-submitted proposal to adopt as a standard the Debit/Credit benchmark prepared by Serlin and Thomas Sawyer of Codd and Date Consulting Group.

Once a standard is settled on, the council will decide how to validate performance claims and publish test results, Serlin said.

"We're very interested in working with other major players to help provide some stability in the benchmarking area," said Ken Amann, manager of information management products at CDC.

The council, he said, should "create some kind of validation procedure, give end users some sensible comparisons — some tests that more than one person has seen, instead of contradictory and confusing information that anyone and his brother might have [contrived] for their own purposes."


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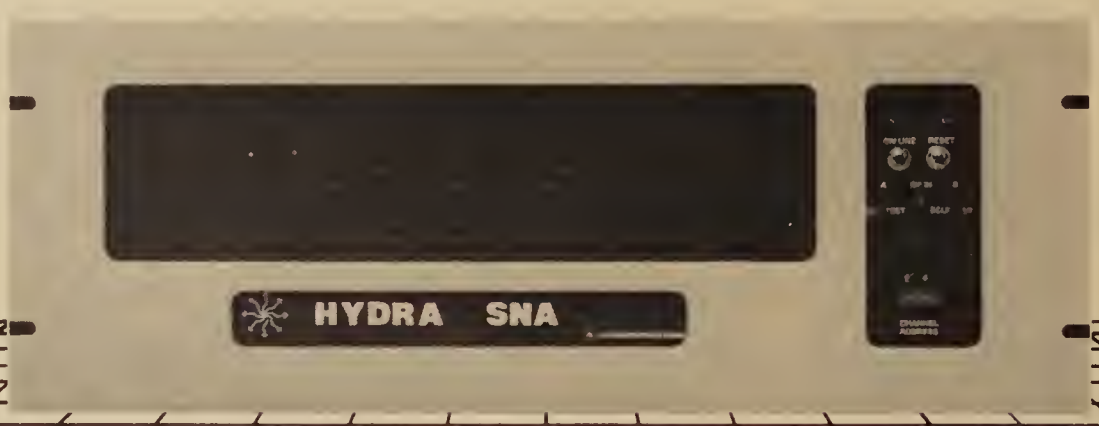


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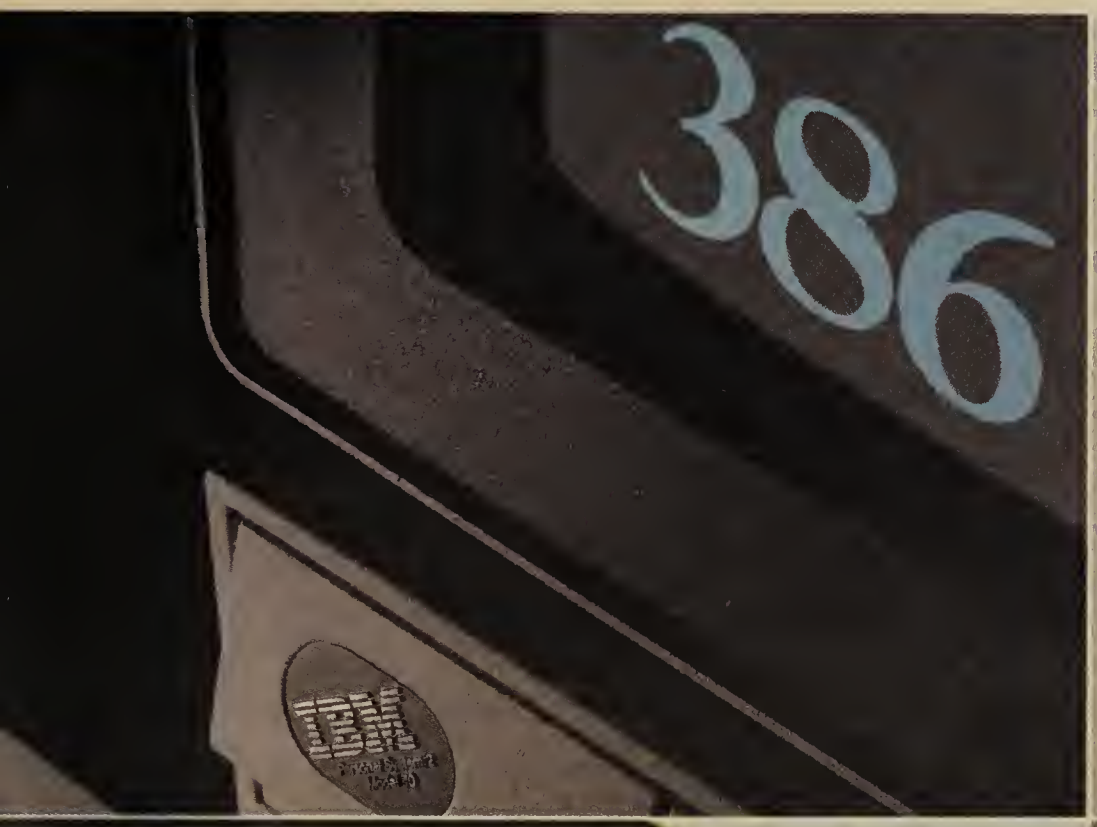

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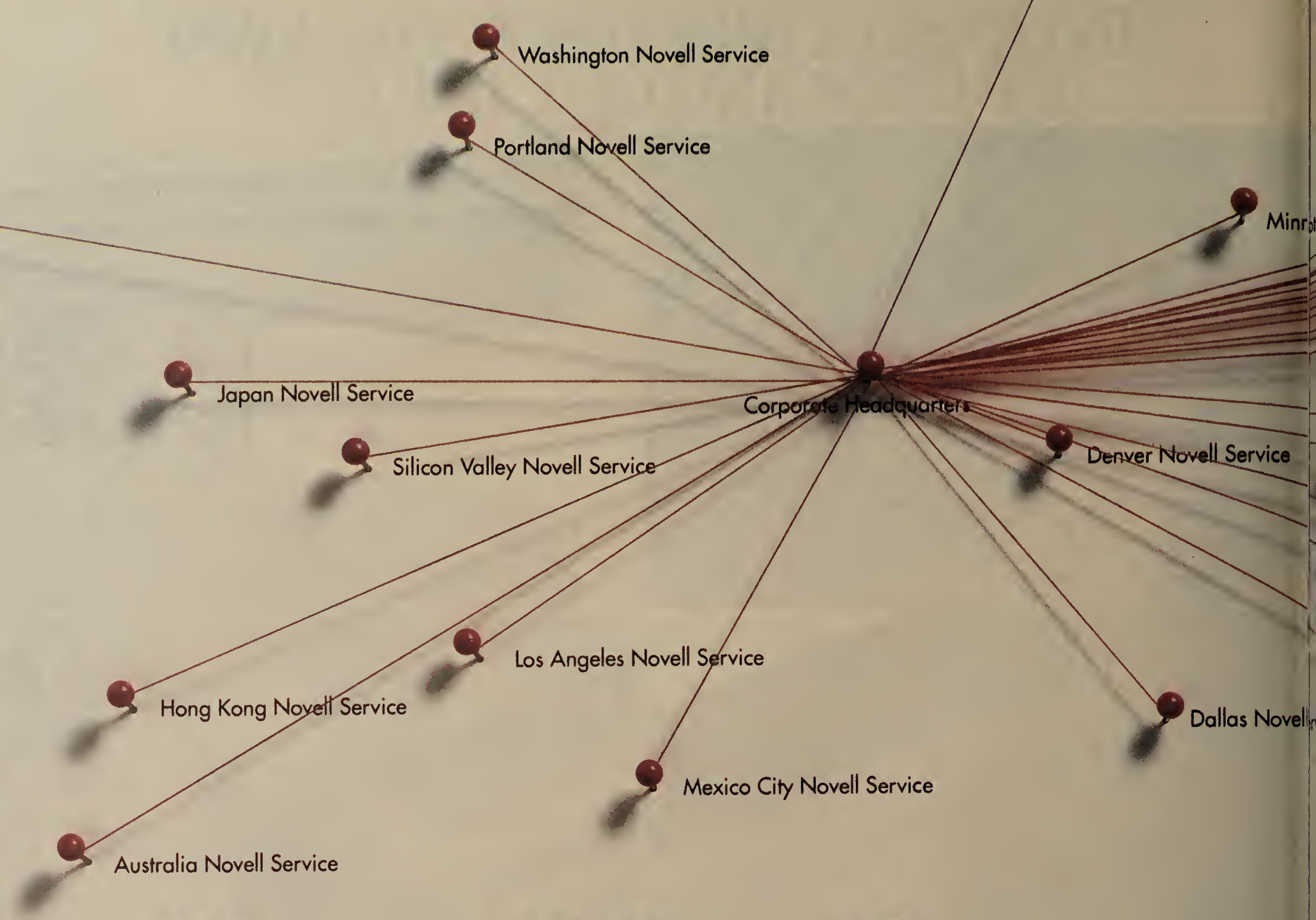


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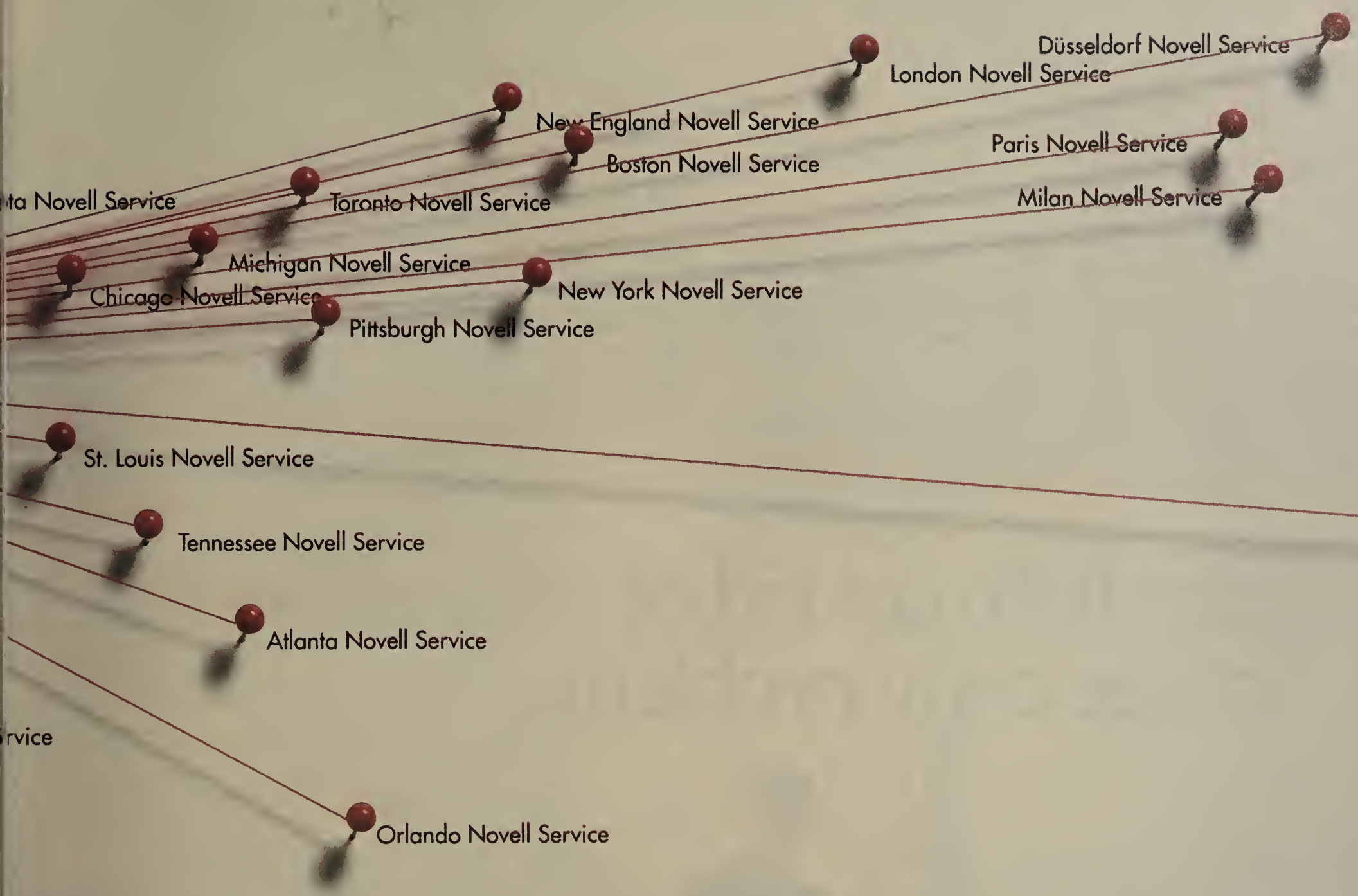


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## NEW AT SIGGRAPH

ATLANTA — Graphics fans gave a new meaning to the phrase "Atlanta Braves" last week, daring the sizzling Georgia heat to see the dazzling offerings of the nation's top graphics vendors at Siggraph '88.

Palo Alto, Calif.-based **Hewlett-Packard Co.** appeared at the graphics trade show with a claimed first: a general-purpose superworkstation designed to animate still images for applications that require the user to see motion. Dubbed the **HP 9000 Model 835**, the workstation is based on HP Precision Architecture, the company's proprietary implementation of reduced instruction set computing, and incorporates an HP 9000 Series 800 Turbo-SRX workstation with an animation interface.

According to the vendor, the interface can transfer data from the main memory to the Turbo-SRX at speeds as fast as 13M byte/sec. This transfer rate enables the workstation to rapidly play back animated images so users can simulate motion in real-time applications.

Scheduled to ship in November, the animation workstation — along with third party-designed graphics-imaging software and board set that lets workstation users transfer images to videotape — signals HP's first step into the animation market, which is estimated to reach $1.2 billion by 1992.

Also on display at Siggraph were the following:

• **Control Systems, Inc.** in St. Paul, Minn., demonstrated the **Artist Designer 12,** its 1,280- by 1,024-pixel high-resolution graphics controller for the IBM Personal Computer AT, Compaq Computer Corp. 386 and compatible systems. Designed for use in both business and computer-aided design (CAD) applications, the controller board displays 256 colors from a 16.7-million-color palette and operates at a horizontal scan rate of 64 KHz at a 108-MHz bandwidth.

On-board capacity is 512K bytes of dynamic random-access memory, the vendor said, and the product was designed around Texas Instruments, Inc.'s TI 34010 graphic systems processor. Support is offered for both Professional Graphics Language and Direct Graphics Interface Specification drivers via on-board firmware. Both drivers are said to contain toolbox software command sets for custom tailoring.

• **Commodore Business Machines, Inc.**, based in West Chester, Pa., introduced **Viking 1,** a 19-in. monochrome monitor for users of the company's Amiga line of personal computers. The monitor is the result of a joint development effort between Commodore and **Moniterm Corp.** in Minnetonka, Minn., and was designed to support sophisticated graphics applications such as desktop publishing, CAD/computer-aided manufacturing and graphical illustration. Viking 1 features 1,008- by 800- by 2-bit resolution, a 72-MHz pixel frequency and a 56-KHz horizontal frequency, according to the vendor.

• The Graphics Products Division of **Star Technologies, Inc.** in Sterling, Va., unveiled two **Graphicon Tempest Graphics Workstations** designed to accommodate surveillance and tracking; mission planning and control; and communications and intelligence applications. The workstations reportedly meet the specifications of the National Communications Security Information Memorandum 5100A. Designated the **G1700** and the **G1600**, the units combine a Graphicon 1700 three-dimensional and graphics processor or a Graphicon 1600 graphics processor, respectively, with a Digital Equipment Corp. Vaxstation II/GPX processor. Both workstations are housed in a 30- by 29- by 38-in. enclosure.

• **Engineering Geometry Systems** in Salt Lake City introduced its first commercial product, **NURBS Now.** The product is a NURBS — which stands for Non-Uniform Rational B-Spline — library of subroutines designed to aid the development of geometric modeling operations, graphics display operations, analysis programs and other products that require geometrically accurate representations for curves and surfaces. According to the vendor, the product will ship in October and will include source code, documentation and sample programs.

• **Sony Microsystems Co.**, based in Palo Alto, announced that the **Hoops 3-D** graphics tool systems for technical workstations from **Ithaca Software** in Ithaca, N.Y., will be available for use with the Sony News family of Unix workstations. Hoops is used to create graphics applications and is targeted at scientific and technical users as well as software vendors creating commercial applications, the company said. Under terms of the agreement, Ithaca Software will act as a third-party Sony Microsystems independent software vendor and will license its products directly to Sony end users, value-added resellers and dealers. Sony Microsystems is a division of the Sony Corporation of America.

• A 20 million floating-point operations per second coprocessor targeted at the Apple Computer, Inc. Macintosh II market was announced by **Mercury Computer Systems, Inc.** in Lowell, Mass. Called **MC3200NU**, the 10 million instructions per second coprocessor reportedly will execute computation-intensive vector and scalar operations for applications such as simulation, modeling, signal processing, image processing and Adobe Systems, Inc.'s Postscript.


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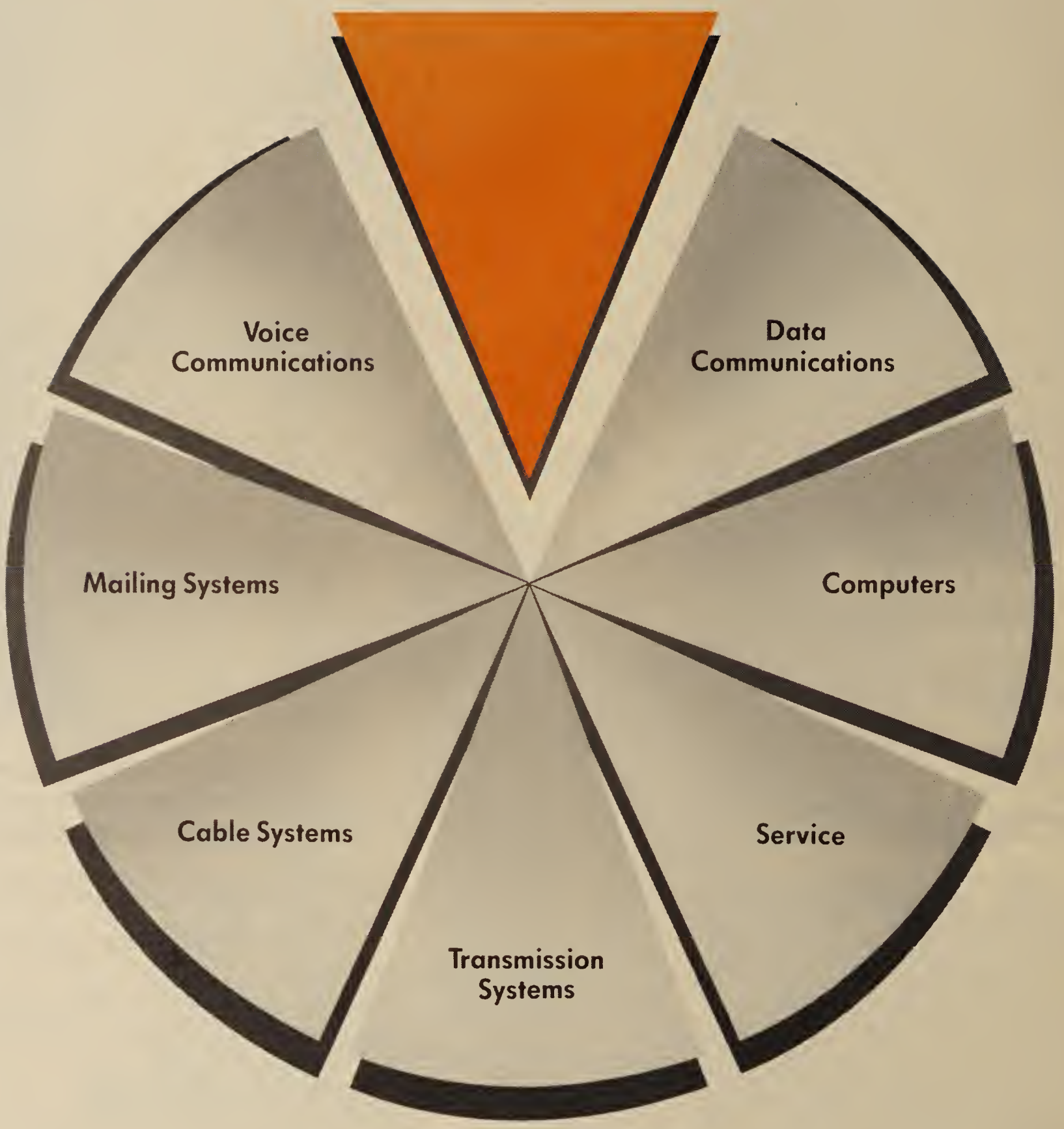


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*Douglas Barney*

# MIS spouts vapor too

**But we call it a backlog.** We all get a kick out of lambasting vendors that are late with promised products. But one thing has been forgotten in the fervor and frustration: Users are often late too!

For vendors, late products are vilified with the term "vaporware." But for users, it is simply an applications backlog. This latter form of vaporware not only irks applications-hungry executives but has driven many an MIS professional out of a job.

The bottom line is that technical advances have done little to make anyone's projects easier to complete. In fact, these things just keep getting more complex and later all the time. And this promised land of the graphical user interface (a bear to program for) is just going to make matters 10 times worse.

Maybe we should all fall asleep for 20 years like Rip van Winkle. Maybe when we wake up, that project will be done!

**Bill Gates for president?** Everyone from Lee Iacocca to Donald Trump has hinted at presidential aspirations. But what about hot microcomputer

*Continued on page 49*

# Dbase on the couch

*Analysis of new version reveals split personality*

BY MARY CONTI-LOFFREDO
and AARON GOLDBERG
SPECIAL TO CW

When it ships later this year, Ashton-Tate Corp.'s Dbase IV will be an enigma to some and merely schizophrenic to others. The dual nature of the product is the result of two entirely different design goals: attracting novices and pleasing power users.

However, the resulting gulf between the novice mode and the power user or developer mode is very large.

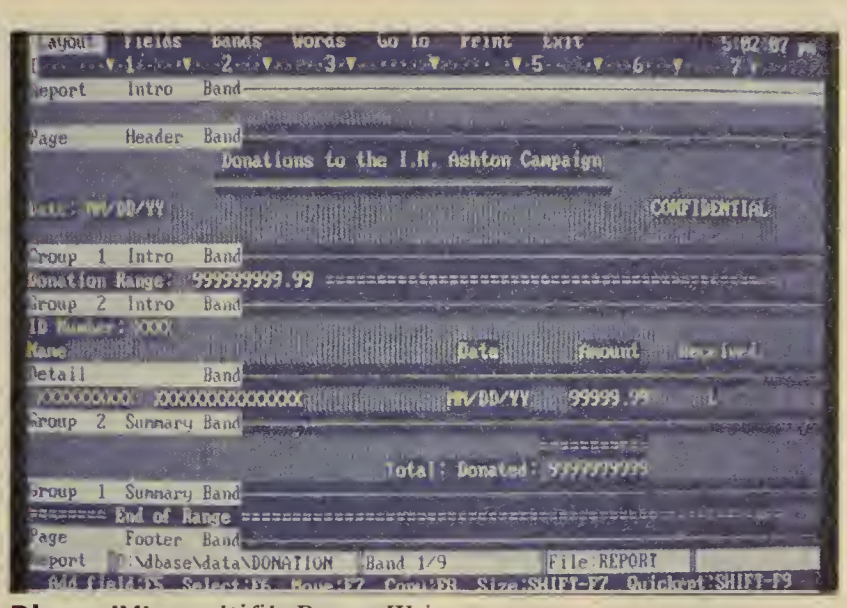
Beginners should enjoy the electronic tutorial, a vast improvement over the paper-based offering in Dbase III Plus. The only problem is that the tutorial does not explain some of the new features and functions that form Dbase IV.

The most important element of the product's revamped interface is the Control Center. This feature allows the individual to "point and shoot," tap into capabilities or generate information. The implementation of the Control Center is quite good, but unfortunately, some of its elements are not in the tutorial.

What the Control Center does well is take care of the often confusing functions of keeping the right queries, reports, indexes and databases together. For more complex functions, Ashton-Tate has implemented a "quick layout" option to make report generation easier.

This brings up a consideration that is important for large

*Continued on page 50*

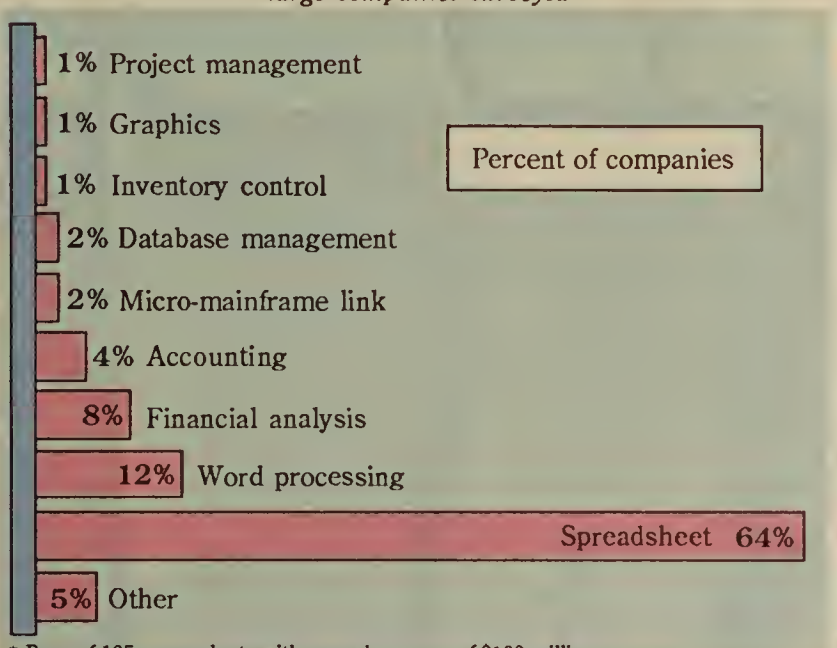



**Dbase IV's** *multifile Report Writer*

## Data View

Motives for first PC

*Spreadsheet applications spurred the initial PC purchase at most large companies surveyed**




* Base of 185 respondents with annual revenue of $100 million or more

SOURCE: INTERNATIONAL DATA CORP.
CW CHART

# Apple expo items: one year later

BY JULIE PITTA
CW STAFF

BOSTON — While last week's Macworld Expo/Boston still attracted delirious Macintosh users, many have already forgotten the most attention-getting new products from last year, which have achieved only limited success.

The greatest disappointment has been Apple Computer, Inc.'s Hypercard, a database product that Apple described as a personal tool kit and industry watchers hailed as revolutionary. Apple officials expected Hypercard to spawn a new third-party applications market. To date, only 10 of those applications, called "stackware," have been released.

Other interest-grabbers at last year's show have experienced similar problems. Apple's Multifinder software has been victimized by the memory chip crunch, and a slew of Apple and third-party networking products have received mostly unfavorable reviews from customers.

Tim Bajarin, vice-president of Creative Strategies Research

*Continued on page 50*

**Inside**

• Conclusion of the DBMS shopping guide. Page 51.
• New shorthand program packs 3,500 macros. Page 47.


# How Micro Focus COBOL helped the U.S. auto industry get up to date with Just-in-Time Manufacturing

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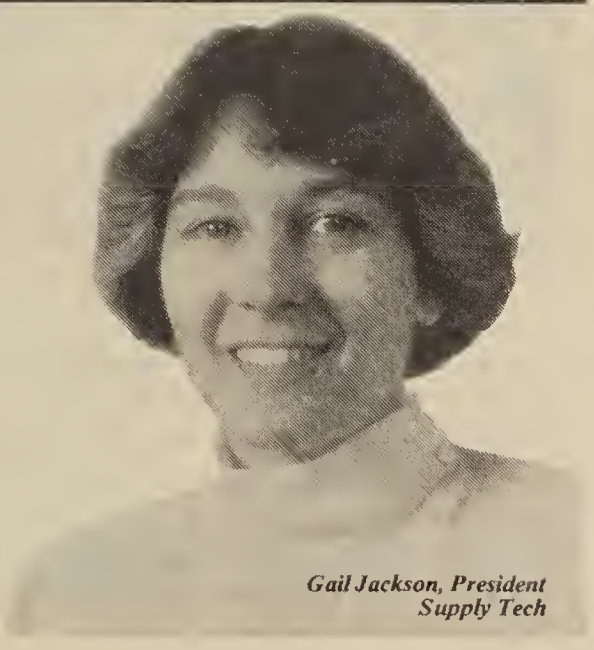

*Gail Jackson, President*
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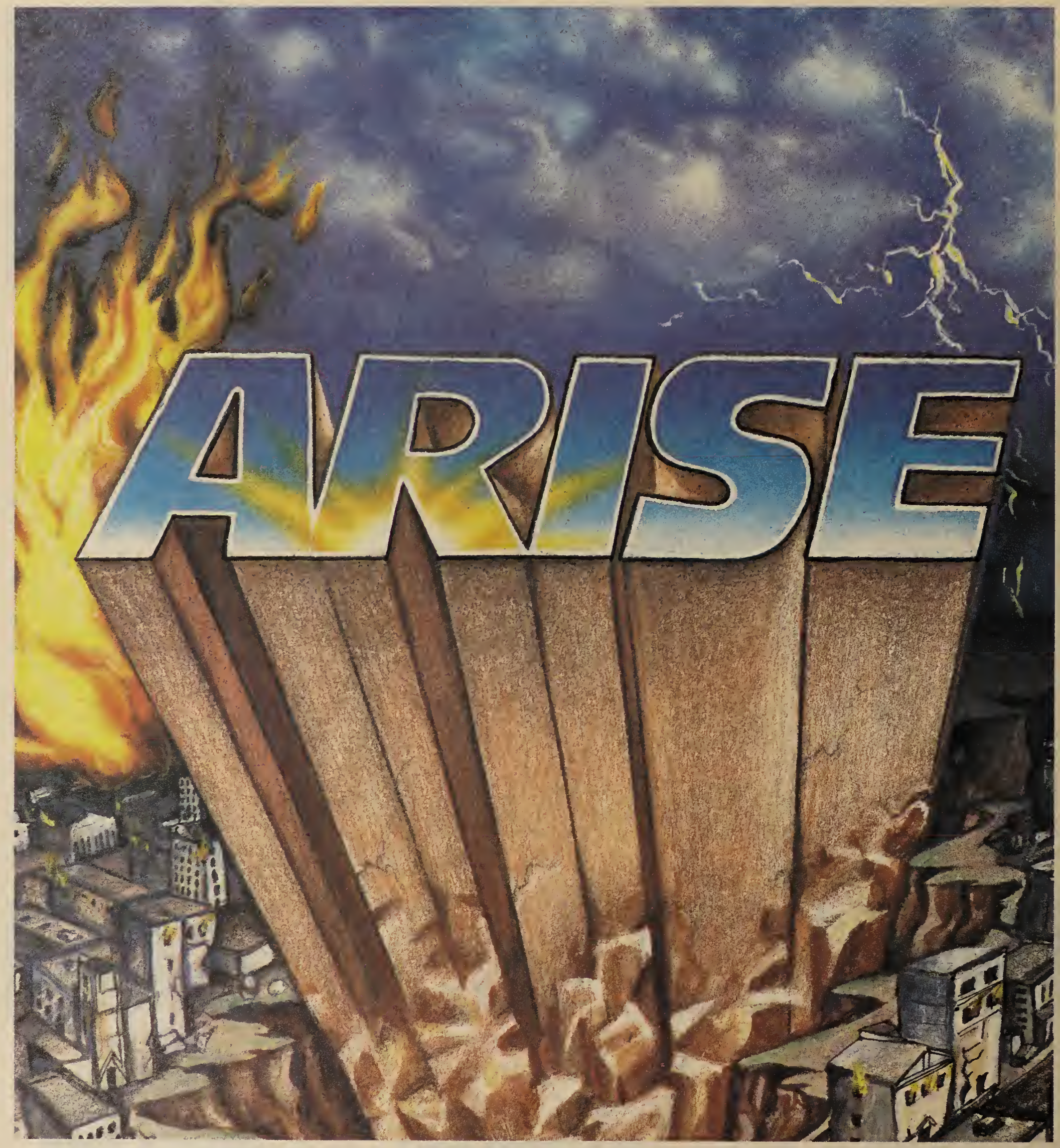


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   - **75.** User: Other _____
   - **95.** Vendor: Other _____ (Please specify)
2. **TITLE/FUNCTION** (Circle one)
   **IS/MIS/DP MANAGEMENT**
   - **19.** Vice President, Asst. VP
   - **21.** Dir., Mgr., Suprv., IS/MIS/DP Services
   - **22.** Dir., Mgr., Suprv., of Operetions, Planning, Adm. Services
   - **23.** Dir., Mgr., Suprv., Analyst, of Systems
   - **31.** Dir., Mgr., Suprv., of Programming
   - **32.** Programmer, Methods Analyst
   - **35.** Dir., Mgr., Suprv., OA/WP
   - **38.** Data Comm. Network/Systems Mgt

   **OTHER COMPANY MANAGEMENT**
   - **11.** President, Owner/Partner, General Mgr
   - **12.** Vice President/Asst. VP
   - **13.** Treasurer, Controller, Financial Officer
   - **41.** Engineenng, Scientific, R&D, Tech. Mgt.
   - **51.** Sales/Mktg. Mgt.

   **OTHER PROFESSIONALS**
   - **60.** Consulting Mgt
   - **70.** Medical, Legal, Accounting Mgt
   - **80.** Educators, Journalists, Librarians, Students
   - **90.** Others _____ (Please specify)
3. **COMPUTER INVOLVEMENT** (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor, or consultant
   - **A.** Mainframes/Superminis
   - **B.** Minicomputers/Small Business Computers
   - **C.** Microcomputers/Desktops
   - **D.** Communications Systems
   - **E.** Office Automation Systems
   - **F.** No Computer Involvement

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   - **60.** Government — State/Federal/Local
   - **65.** Communications Systems/Public Utilities/ Transportation
   - **70.** Mining/Construction/Petroleum/Refining/Agric.
   - **80.** Manufacturer of Computers, Computer-Related Systems or Peripherals
   - **85.** Computer & DP Services, including Software/Service Bureau/Time Sharing/Consulting
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   - **75.** User: Other _____
   - **95.** Vendor: Other _____ (Please specify)
2. **TITLE/FUNCTION** (Circle one)
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   - **19.** Vice President, Asst. VP
   - **21.** Dir., Mgr., Suprv., IS/MIS/DP Services
   - **22.** Dir., Mgr., Suprv., of Operations, Planning, Adm. Services
   - **23.** Dir., Mgr., Suprv., Analyst, of Systems
   - **31.** Dir., Mgr., Suprv., of Programming
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   - **C.** Microcomputers/Desktops
   - **D.** Communications Systems
   - **E.** Office Automation Systems
   - **F.** No Computer Involvement

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# REVIEWS/NEW PRODUCTS

# Wordperfect 5.0 hits the right buttons

| Wordperfect 5.0 |
|---|
| *Price: $495* |
| • Performance: Good to very good<br>• Documentation: Very good<br>• Ease of learning: Very good<br>• Ease of use: Excellent<br>• Error handling: Very good<br>• Support: Poor to excellent<br>• Value: Excellent |

Wordperfect Corp.'s Wordperfect Version 5.0 represents a major improvement over Version 4.2 and includes a host of new features, significant improvements in performance and redone documentation.

**Features:** Wordperfect 5.0 includes a powerful series of enhancements for laser printers, fonts and desktop publishing projects. In addition, it now creates multiple newspaper-style columns with ease and includes a multiple-view preview feature that shows the printed document at two magnification levels.

Wordperfect 5.0 offers a nice list of graphic-handling capabilities, including a memory-resident screen-grabbing program and the ability to import a wide range of graphic formats from other packages. Images can be sized, rotated, reversed, cropped or labeled with captions.

A 30-image clip-art library comes with the program. Wordperfect 5.0 inserts graphics anywhere on the page, flows text, places images across columns and can even frame them with line art.

**Performance: Good to very good.** Basic correspondence and memo tasks are accomplished easily. Wordperfect 5.0 features an excellent sorting module, but the math feature is still cumbersome to use. The program will only perform formula-type hyphenation automatically, and dictionary hyphenation must be purchased for $15. Correspondence is very good.

**Wordperfect** *Version 5.0 features document previewing*

The thesaurus and speller are great writing aids, and the speller will count words in a document without spell-checking. They, too, are very good.

The mail-merge feature is powerful, but inserting proper symbols can be confusing. It rates a good. The outline formatter, which can be used within a document, is also good.

Indexing can be done through multiple documents with multiple styles. The table of contents feature is versatile and handy. Both the indexing and the table of contents rate a very good.

Although we could not distinguish between footnotes and endnotes in a document except by revealing embedded codes, we rate the footnotes category good. Revision tracking, which now includes a document summary screen that shows the creation date but no revision date, also scores a good.

Almost everything related to printer selection, setup and font selection can be handled within the program. Fonts can be chosen by name instead of number. Style sheets are useful and designed well; both fonts and styles are very good.

**Documentation: Very good.** Wordperfect 5.0's completely new documentation basically consists of clear explanations with few examples. The manual has a getting-started section, an alphabetically organized reference guide with cross-references and an appendix with a variety of technical discussions. It also has a complete index and glossary.

The vendor also supplies an instruction manual with illustrations of a variety of applications. A printer manual is set to be available soon for $19.95.

**Ease of learning: Very good.** Wordperfect has always been relatively easy to learn and teach. It is forgiving of errors, provides easy exit from false starts, offers full on-line Help and contains an interactive on-line tutorial program.

**Ease of use: Excellent.** Due to Wordperfect 5.0's flexibility and unstructured approach, occasional and professional word processing users find this program easy to use.

**Error handling: Very good.** Wordperfect 5.0 includes data protection features such as a timed backup, optional autosaving to a backup file and a quick-save option that saves a file without formatting. You can also edit a copy of the source file instead of the original. The Undo command recovers from three levels of deletes.

We found a bug in the Text In/Out operation, which saves files in ASCII or Wordperfect 4.2 format. Text In/Out does not update the directory on the disk until you exit the program. The vendor said this will be fixed in an upcoming release.

**Support: Policies — Excellent; Technical support — Poor.** Support policies include toll-free, unlimited support 11 hours a day during the week and four hours on Saturday. An unlimited money-back guarantee, a newsletter, information about a Wordperfect users group and an electronic bulletin board are all included.

Although the vendor offers strong technical support, the recent introduction of Wordperfect 5.0 has swamped toll-free lines in Utah. We had to call more than 10 times before getting through.

**Value: Excellent.** At $495, Wordperfect 5.0 is as full-featured as any program on the market and offers performance superior to its competitors'.

**Note**

Reviews are provided by the IDG News Service.

# Toshiba laptop a trailblazer

| Toshiba T5100 |
|---|
| *Price: $7,499* |
| • Performance: Very good to excellent<br>• Documentation: Excellent<br>• Setup: Very good<br>• Ease of use: Good<br>• Serviceability: Excellent<br>• Value: Very Good |

The trend in laptops has been to offer all the power and much of the flexibility of a desktop personal computer in a convenient, truly portable package. While one branch of the laptop market pursues those for whom light weight and long battery life are paramount, machines are now available for those who demand top-notch performance and more hard-disk space.

The Toshiba America, Inc. T5100 is one that provides a combination of power and portability never before available.

**Features:** The T5100 weighs 14.7 pounds. It is 12.4 inches wide, 14.2 inches deep and 3.7 inches thick. It uses an Intel Corp. 80386 processor running at 16 MHz with one wait state. The standard configuration includes 2M bytes of 32-bit random-access memory, a 1.44M-byte, 3-in. floppy disk drive and a 40M-byte hard disk drive. An additional 2M bytes of RAM is available as an option costing $1,299.

Also included is a nine-pin serial port, a connector for an external red-green-blue, IBM Enhanced Graphics Adapter (EGA)-compatible color monitor and a combination parallel port/external disk drive port that supports an external 5-in. 360K-byte floppy disk drive.

**Performance: Very good to excellent.** The T5100 is

*Continued on page 40*

# Manuscript goes corporate

*Breaks out of techie slot, targets general use*

| Lotus Manuscript 2.0 |
|---|
| *Price: $495* |
| • Performance: Good to excellent<br>• Documentation: Excellent<br>• Ease of learning: Satisfactory<br>• Ease of use: Very good<br>• Error handling: Good<br>• Support: Good to very good<br>• Value: Very good |

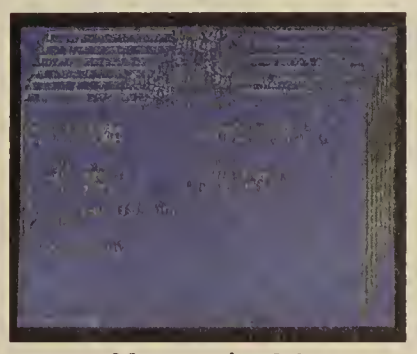
Lotus Development Corp.'s Manuscript is a sophisticated text processor that outshines the competition in producing reports, manuals and other complex documents. No longer just a tool for technical writers, Release 2.0 is also suited to those in the corporate environment who demand attractive, well-formatted documents.

**Features:** Manuscript 2.0 has two editing modes: structured, for complex documents containing sections and subsections, and unstructured, for simpler documents. Both modes allow creation of an index and provide everything you need for footnotes, end notes and level notes.

Manuscript 2.0 includes macros, a thesaurus, support for downloadable fonts, a page-break display in the editor, multiline headers and footers, a library feature and support for named blocks, or style sheets.

You can import Lotus' 1-2-3 or Symphony worksheets directly and hook into them with a one-way hot link. You can print in portrait or landscape mode and can even mix the two in one document. There is a temporary exit to DOS function, expanded sorting capabilities and simple math functions within the editor.

**Performance: Good to excellent.** In general, we found Manuscript 2.0 quick and responsive. It has a well-designed interface and can produce extremely attractive output on a laser printer.



**Lotus'** *Manuscript 2.0*

We tested the product on several IBM Personal Computer AT-class systems and an IBM Personal System/2 Model 60. We used an Apple Computer, Inc. Laserwriter Plus, a Hewlett-Packard Co. HP Laserjet Series II and an HP Thinkjet.

One of Manuscript 2.0's strengths is working with columns — not to be confused with the winding column mode. The search feature is especially fast,

*Continued on page 40*

# Toshiba

FROM PAGE 39

simply the fastest laptop we have tested. It rates a hearty excellent for speed. Not only is its processor speedy, but the hard disk is as well. The other standout feature is its display; it can show 45 rows or 40 lines of text on a single screen. And if desktop publishing is your forte, the higher EGA resolution allows you to actually read most typefaces while the page is displayed in reduced size.

Software compatibility is almost perfect. We tested a variety of common software products on the T5100. While we were testing the system, the T5100 was not compatible with the standard version of Windows 386, so software compatibility gets lowered one notch to very good.

The T5100's 82-key keyboard feels very good and has a good layout. A numeric inlay can be activated when necessary. There are dedicated keys for all the cursor controls, and the keyboard is capable of generating all the codes generated by a 101-key enhanced keyboard.

**Documentation: Excellent.** The T5100's documentation consists of three manuals and a setup package, all stored in a handy slip case. The level of detail, combined with liberal use of full-color photos and detailed illustrations, is sufficient for even a rank amateur.

Each of the manuals, except the 15-page First Time booklet, has a table of contents, a section explaining the organization and nomenclature of the manual and an index.

**Setup: Very good.** The excellent documentation makes setup a breeze. The whole process should take about a half-hour — if you're a slow reader.

**Ease of use: Good.** Ease of use could be improved if Toshiba provided an on-line Help feature and made the plasma display removable. The other improvement we see possible would be the provision of optional battery power.

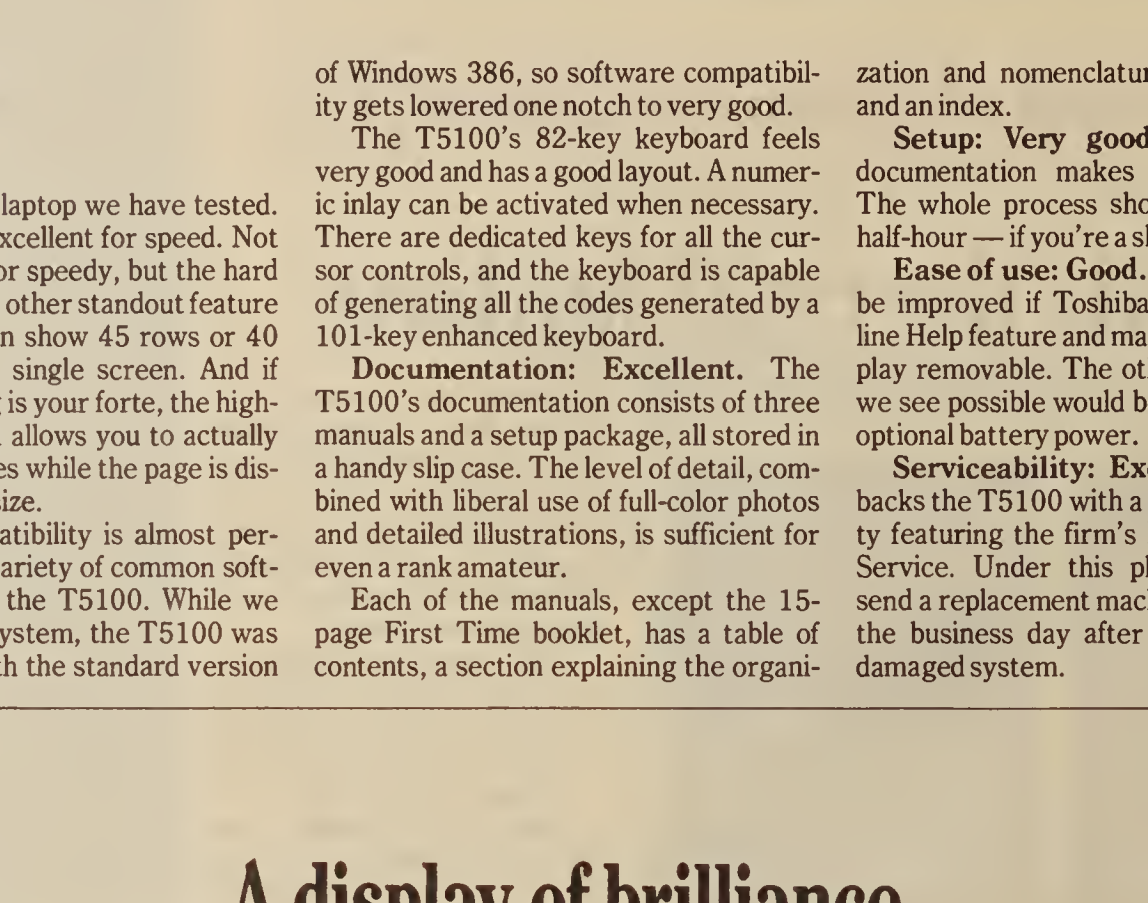
**Serviceability: Excellent.** Toshiba backs the T5100 with a one-year warranty featuring the firm's Exceptional Care Service. Under this plan, Toshiba will send a replacement machine by the end of the business day after it receives your damaged system.

Toshiba provides a toll-free technical support line. Technicians are available from 7 a.m. to 5 p.m. Pacific time. Most of our calls were answered on the first ring. In each case, the service representative answered our questions promptly, clearly, completely and very pleasantly.

Toshiba also maintains its own bulletin board service and on-line support through Compuserve, Inc.

**Value: Very good.** Toshiba has done a fine job of packing true 80386 speed and power in a compact, relatively lightweight laptop. The T5100 sells for $7,499. For roughly $1,000 less than its closest competitor, the Gridcase 1530, the T5100 is faster, has a better keyboard and features a high-resolution EGA display. What it lacks is battery power.


# A display of brilliance.



LEE DATA

# The New Lee Data SmartStation™ Featuring Mod 6: Two full screens in one.

Introducing a smarter way to work.

Even at it's simplest, the Lee Data SmartStation is an enhanced, windowing display, complete with Mod 6, a unique, new presentation format that displays two entire Mod 2 screens at once. That's a full 24 lines by 80 columns *times two*. No more scrolling around.

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At your option, add Lee Data's API software and the SmartStation is programmable. Now you can automate and accelerate your most repetitious, labor-intensive tasks.

And if you need local processing, upgrade the SmartStation to run MS-DOS® programs.

**Even the standard features stand out.**

With Open Windows™ and All-in-One®, you can work with a variety of hosts in a variety of screen sizes simultaneously.

You'll also save more keystrokes. Up to 30,000 at a time, thanks to the built-in diskette drive.

And, it doesn't take technical genius to operate the SmartStation. A customizable menu provides an easy interface to system features, API programs, and MS-DOS so you can put *your* intelligence to work. Now that's brilliant.

For details, plus One-Minute Customer Success Stories, call **1-800-LEE-DATA.**

| Vendor | Lee Data SmartStation | IBM® 3194 |
|---|---|---|
| Mod 6 | X | |
| API | X | X |
| Multiple Async Sessions | X | |
| 80286 Processor | X | |
| MS-DOS Support | X | |
| Mods 2-5 | X | X |
| 30K Keystroke Record/Playback | X | X |
| Hard Disk Option | X | |

LEE DATA CORPORATION

SmartStation and Open Windows are trademarks and All-in-One is a registered trademark of Lee Data Corporation.
IBM is a registered trademark of International Business Machines Corporation.
MS-DOS is a registered trademark of MicroSoft Corporation.


# Manuscript

FROM PAGE 39

and the new edition adds typesetting-like control over hyphenation. Correspondence earns a score of good.

We discovered a glitch in the speller. If you access it from the editor, the pop-up form presumably lets you specify the document to be spell-checked. But no matter what you enter in this field, the current document will be checked. The speller and thesaurus are good.

Graphics integration and compatibility are both good. Manuscript 2.0 supports several graphics file formats.

**Documentation: Excellent.** The manuals, developed using Manuscript, are clearly written and well designed. On-line Help has been improved, and you now have the option of displaying such useful information as the available function keys on the bottom of the screen.

**Ease of learning: Satisfactory.** Manuscript 2.0 is a hefty program, and it is likely to take several weeks before all the advanced features can be mastered. Beginners might be overwhelmed by some of the unorthodox concepts, but even a new user can learn the basics in a few hours. Although Lotus provides several sample files used in the detailed tutorials in the manual, an on-line tutorial would be welcome.

**Ease of use: Very good.** Once you learn it, using Manuscript 2.0 becomes second nature.

**Error handling: Good.** Manuscript now has an optional auto-save function with user-definable time intervals. You can request a backup file when editing. Manuscript 2.0 detects any changes made in your document and prompts you to save if you try to exit with unsaved data.

**Support: Good to very good.** Lotus provides unlimited technical support by telephone between 8:30 a.m. and 8:00 p.m. Eastern time. The number is not toll free, but there is a coupon on the box for toll-free priority support for six months.

We made three calls to Lotus. On only one try did we meet with busy signals. On all occasions, we were connected after less than one minute on hold. The support personnel knew the product well, were very helpful and did not appear rushed.

**Value: Very good.** At $495, Manuscript 2.0 is priced identically to Microsoft Word and Wordperfect and can hold its own against these giants on most assignments. For lengthy, structured reports, technical work or software documentation, Manuscript 2.0 is virtually without peer.

# How to look good from start...

Bicycle Parts
PACIFIC

Mr Gerry Miller
94 Poplar St
Evanston, Il 60091

Dear Mr Miller

Thank you for contacting Bicycle Parts Pacific regarding your interest in racing bicycles. BPP offers some of the finest handmade racing bicycles available today.

The attached brochure illustrates the top-of-the-line models we offer. Racing enthusiasts are particularly impressed with the 4-pound aluminum frames. At this exceptional light weight, this family of racing bikes still delivers excellent riding stability, even for our most demanding racers. Champion cyclist Jan Bell recently praised the performance of her BPP equipment in an article I've included from our PATH newsletter.

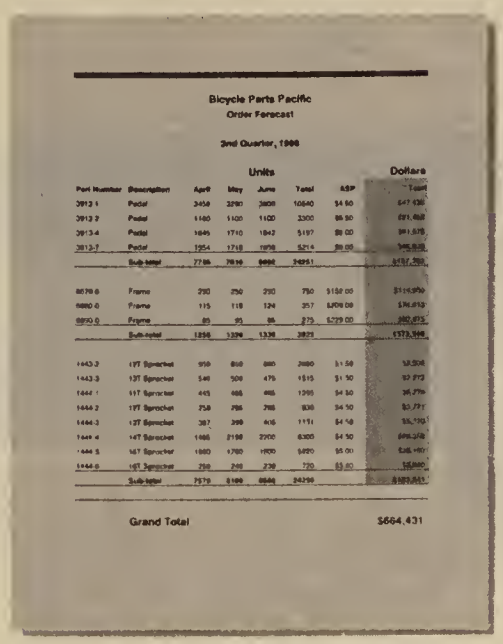
Information you specifically requested on our Ergonomic Brake System is also enclosed. This system, because of its responsiveness and durability, is highly recommended for your racing bike. I have also included other information on Bicycle Parts Pacific products which should interest you. To test ride BPP bicycles, we recommend you visit your bicycle dealer. He'll help you select the correct frame size and can assist you in matching the right components to your racing needs.

Sincerely

R Archibald

Roger Archibald

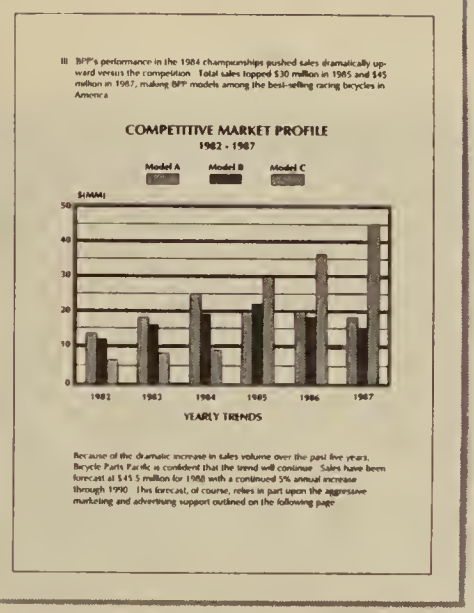
Sales Representative


Bicycle Parts Pacific
Order Forecast

2nd Quarter, 1988

| Part Number | Description | Units April | May | June | Total | SRP | Dollars Total |
|---|---|---|---|---|---|---|---|
| 3913-1 | Pedal | 3450 | 3290 | 3808 | 10640 | $4.50 | $47,880 |
| 3913-2 | Pedal | 1160 | 1105 | 1100 | 2300 | $8.50 | $91,630 |
| 3913-4 | Pedal | 1845 | 1710 | 1842 | 5197 | $9.00 | $91,573 |
| 3913-7 | Pedal | 1954 | 1718 | 1978 | 5214 | $9.00 | $46,926 |
| | Sub-total | 7749 | 7819 | 8828 | 24251 | | $417,709 |
| 8878-8 | Frame | 290 | 250 | 210 | 750 | $150.00 | $112,500 |
| 8880-6 | Frame | 115 | 118 | 124 | 357 | $208.00 | $74,256 |
| 8890-0 | Frame | 85 | 95 | 95 | 275 | $279.00 | $76,725 |
| | Sub-total | 1256 | 1294 | 1338 | 3829 | | $1,372,968 |
| 1443-2 | 127 Sprocket | 950 | 860 | 880 | 2690 | $1.50 | $3,504 |
| 1443-3 | 137 Sprocket | 540 | 500 | 475 | 1515 | $1.50 | $2,272 |
| 1444-1 | 117 Sprocket | 445 | 465 | 485 | 1395 | $4.50 | $6,278 |
| 1444-2 | 127 Sprocket | 750 | 795 | 788 | 1838 | $4.50 | $8,271 |
| 1444-3 | 137 Sprocket | 387 | 399 | 405 | 1191 | $4.50 | $5,360 |
| 1444-4 | 147 Sprocket | 1465 | 2198 | 2900 | 6300 | $4.50 | $28,350 |
| 1444-5 | 167 Sprocket | 1880 | 1780 | 1900 | 5490 | $5.00 | $27,450 |
| 1444-6 | 187 Sprocket | 250 | 240 | 230 | 720 | $5.50 | $3,960 |
| | Sub-total | 7579 | 8198 | 8646 | 24298 | | $185,845 |

Grand Total $664,431


III BPP's performance in the 1984 championships pushed sales dramatically upward versus the competition. Total sales topped $30 million in 1985 and $45 million in 1987, making BPP models among the best-selling racing bicycles in America.

COMPETITIVE MARKET PROFILE
1982 - 1987

Model A Model B Model C

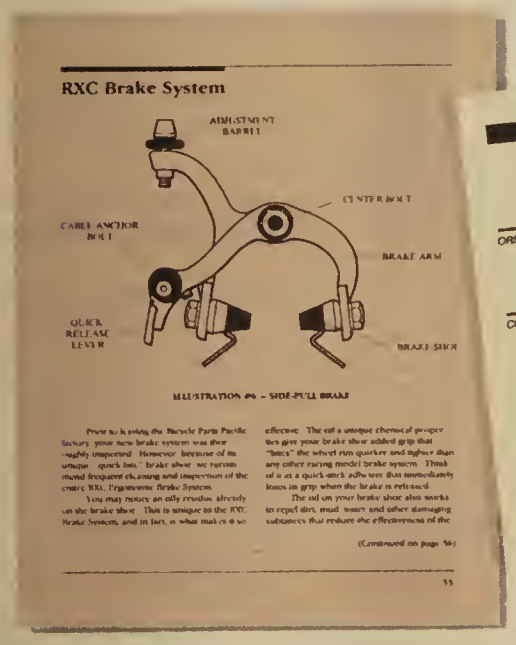
$(MM)

50
40
30
20
10
0

1982 1983 1984 1985 1986 1987

YEARLY TRENDS

Because of the dramatic increase in sales volume over the past five years, Bicycle Parts Pacific is confident that the trend will continue. Sales have been forecast at $45.5 million for 1988 with a continued 5% annual increase through 1990. This forecast, of course, relies in part upon the aggressive marketing and advertising support outlined on the following page.


RXC Brake System

ADJUSTMENT BARREL
CENTER BOLT
CABLE ANCHOR BOLT
BRAKE ARM
QUICK RELEASE LEVER
BRAKE SHOE

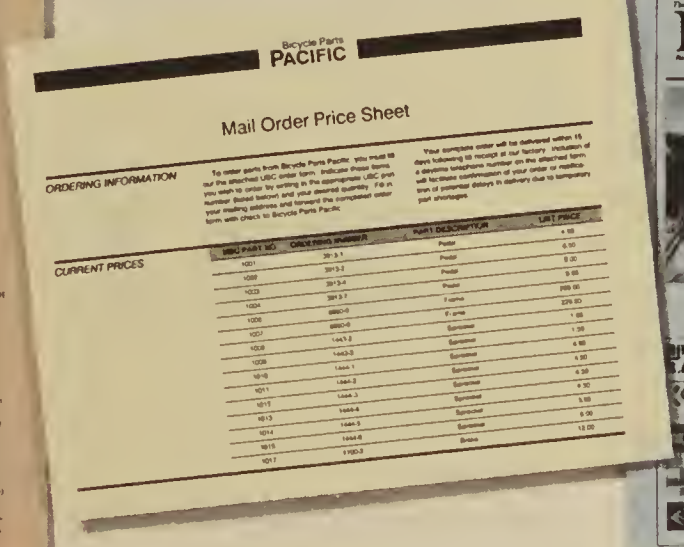
ILLUSTRATION #6 – SIDE-PULL BRAKE

Prove to it is using the Bicycle Parts Pacific factory your new brake system was thoroughly inspected. However because of its unique "quick link" brake shoe, we recommend frequent cleaning and inspection of the entire RXC Ergonomic Brake System.

You may notice an oily residue already on the brake shoe. This is unique to the RXC Brake System, and in fact, is what makes it so effective. The oil on your brake shoe also works to repel dirt, mud, water and other damaging substances that reduce the effectiveness of the

(Continued on page 56)




Bicycle Parts
PACIFIC

Mail Order Price Sheet

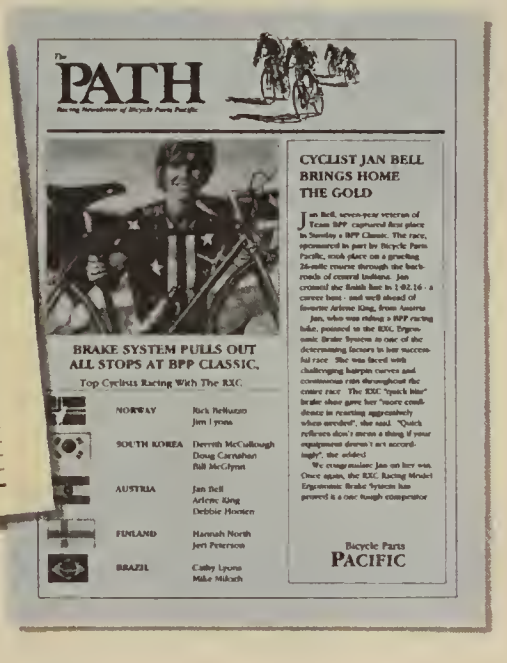
ORDERING INFORMATION

To order parts from Bicycle Parts Pacific, you must fill out the attached UBC order form. Indicate those items you wish to order by writing in the appropriate UBC part number (listed below) and your desired quantity. Fill in your mailing address and forward the completed order form with check to Bicycle Parts Pacific.

Your complete order will be delivered within 15 days following its receipt at our factory. Inclusion of a daytime telephone number on the attached form will facilitate confirmation of your order or notification of potential delays in delivery due to temporary part shortages.

CURRENT PRICES

| UBC PART NO. | CATALOG NUMBER | PART DESCRIPTION | LIST PRICE |
|---|---|---|---|
| 1001 | 3913-1 | Pedal | 4.50 |
| 1002 | 3913-2 | Pedal | 8.50 |
| 1003 | 3913-4 | Pedal | 9.00 |
| 1004 | 3913-7 | Pedal | 9.00 |
| 1005 | 8880-6 | Frame | 299.00 |
| 1006 | 8890-0 | Frame | 379.00 |
| 1007 | 1443-2 | Sprocket | 1.50 |
| 1008 | 1443-3 | Sprocket | 1.50 |
| 1009 | 1444-1 | Sprocket | 4.50 |
| 1010 | 1444-2 | Sprocket | 4.50 |
| 1011 | 1444-3 | Sprocket | 4.50 |
| 1012 | 1444-4 | Sprocket | 4.50 |
| 1013 | 1444-5 | Sprocket | 5.00 |
| 1014 | 1444-6 | Sprocket | 5.50 |
| 1015 | 1100-3 | Brake | 12.00 |
| 1017 | | | |


The PATH
Racing Newsletter of Bicycle Parts Pacific



BRAKE SYSTEM PULLS OUT ALL STOPS AT BPP CLASSIC.

Top Cyclists Racing With The RXC

| | |
|---|---|
| NORWAY | Rick Bellustro<br>Jim Lyons |
| SOUTH KOREA | Derreth McCullough<br>Doug Carnahan<br>Bill McGlynn |
| AUSTRIA | Jan Bell<br>Arlette King<br>Debbie Hoosen |
| FINLAND | Hannah North<br>Jeri Peterson |
| BRAZIL | Cathy Lyons<br>Mike Mikrath |

CYCLIST JAN BELL BRINGS HOME THE GOLD

Jan Bell, seven-year veteran of Team BPP, captured first place in Sunday's BPP Classic. The race, sponsored in part by Bicycle Parts Pacific, took place on a grueling 26-mile course through the backroads of central Indiana. Jan crossed the finish line in 1:02.16 - a career best - and well ahead of favorite Arlene King, from Austria.

Jan, who was riding a BPP racing bike, pointed to the RXC Ergonomic Brake System as one of the determining factors in her successful race. She was faced with challenging hairpin curves and continuous rain throughout the entire race. The RXC "quick link" brake shoe gave her "more confidence in resetting aggressively when needed", she said. "Quick reflexes don't mean a thing if your equipment doesn't act accordingly", she added.

We congratulate Jan on her win. Once again, the RXC Racing Model Ergonomic Brake System has proved it is one tough competitor.

Bicycle Parts
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to finish.


*The HP LaserJet Series II Printer.*

Nothing brings your ideas to life like the HP LaserJet Series II Printer—from office memos to forms to newsletters. As the leading laser printer, it works with all popular PCs and PC software packages. And, with a wide range of fonts, you get more options to create superior looking documents.

With additional memory you can even print sophisticated 300 DPI full-page graphics. And with HP's ScanJet scanner, you can also easily add photographs, illustrations and text.

No wonder more people choose the original over all other laser printers combined.

So call 1 800 752-0900, Ext. 900D for your nearest HP dealer.

HEWLETT PACKARD

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Print samples were created using Microsoft Word, Microsoft Excel, and Aldus PageMaker.

# NEW PRODUCTS

## Systems

**Intel Corp.'s Personal Computer Enhancement Operation** has announced price cuts ranging from 5% to 13% for most of its math coprocessors sold in the retail channel.

According to the vendor, the coprocessors are for use in the IBM Personal Computer and compatibles.

The Intel 8087 math coprocessor has been reduced from $175 to $167, and the 80287 coprocessor has been reduced from $295 to $260, the vendor said.

In addition, the 80387-16 coprocessor, which was originally sold for $795, is now available for $750.

Complete price-change information on the entire line of Intel math coprocessors is available from the vendor.

Intel, MS C03-07, 5200 N.E. Elam Young Pkwy., Hillsboro, Ore. 97124. 503-629-7354.

## Software applications packages

**Elliam Associates** has introduced **Rememdir**, a program designed to aid users in remembering their file directory contents.

The user can reportedly add a description for each file up to 50 characters long. The package also allows the user to build commands to run various programs and simultaneously supply the file name to be used. An IBM Personal Computer, PC XT, AT or compatible running Microsoft Corp.'s MS-DOS or IBM's PC-DOS is required for operation.

Rememdir costs $29.95.

Elliam Associates, P.O. Box 6922, Los Osos, Calif. 93412. 805-528-5871.

**F/22 Press** has announced a set of macros developed to work with Wordperfect Corp.'s Wordperfect 5.0.

Called **Betteryet**, the macros can be used with Wordperfect Versions 4.1, 4.2 and 5.0. The product uses two-key commands that reportedly reduce the number of keystrokes and menu selections needed to use Wordperfect.

Betteryet is available for $24.95 on 5¼-in. disks and $29.95 on 3½-in. disks. The package runs on IBM PC-DOS and Microsoft Corp. MS-DOS personal computers.

F/22 Press, P.O. Box 141, Leonia, N.J. 07605. 201-568-6250.

## Software utilities

**Prime Solutions, Inc.** has introduced an automated artificial intelligence software system that reportedly repairs and maintains IBM Personal Computers, PC XTs and ATs, Personal System/2s and clones.

**Disk Technician Advanced** eliminates the causes of data corruption, loss and DOS error messaging by automatically correcting both media- and data-related hard-disk errors, the vendor said. Each system consists of a single 5¼- or 3½-in. floppy disk that works with two hard drives and an unlimited number of floppy disks.

Disk Technician Advanced cost $189.95.

Prime Solutions, 1940 Garnet Ave., San Diego, Calif. 92109. 619-274-5000.

**Custom Applications, Inc.** has announced a printer utility software that reportedly enables the printing of Adobe Systems, Inc. Postscript language files on ordinary printers.

Called **Freedom of the Press**, the product includes 35 high fonts and an intelligent font-scaling system for infinite sizes and rotation angles. The software will be offered in two versions, one incorporating Bitstream Fontware and typefaces, and the other will use Intellifont from Compugraphic Corp.

The product supports laser, ink jet and dot matrix printers.

Freedom of the Press costs $495.

Custom Applications, 5 Middlesex Technology Center, 900 Middlesex Tnpk., Billerica, Mass. 01821. 508-667-8585.

# Small cash input for laser-quality output.

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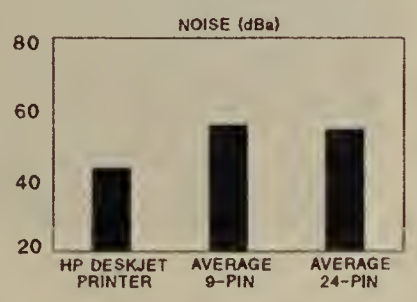
Dear Reader:

This letter was printed on one of the finest printers available today.

The HP DeskJet Printer.

It prints text and graphics more crisp and clear than 24-pin printers. And as you can see from the chart, it's a lot quieter than 24-pin printers, too.

PRINTER NOISE LEVELS




It's also easy to use. It does your important office tasks, but it's small enough to fit on your desk. Everything considered, it's the perfect personal printer.

And one of the most amazing features of all is its price. It's **under $1,000.**

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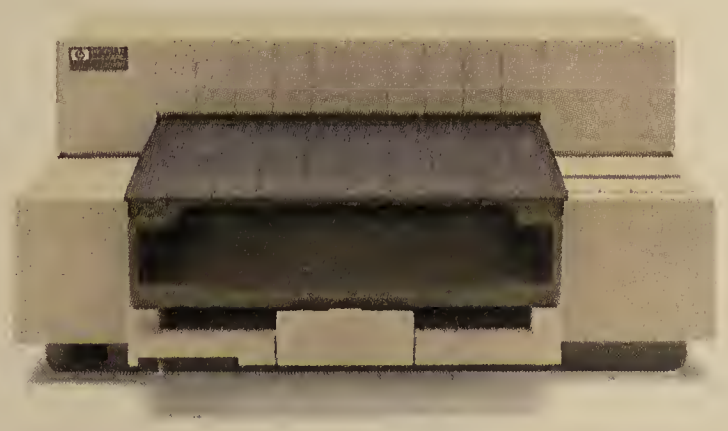
Sincerely,

Richard Snyder

## The HP DeskJet Printer. Laser-Quality Output for Under $1000.



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Is there a stir going on among your corporate computer systems?

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Look at the maze of computers in your company: different brands, different types, bought at different times; different standards – and even with different connection plugs. Does this cause the mainframe in Corporate Planning to ignore the PCs in Development?

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- **Network Media:** Fiber optic and twisted pair.
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- **Speed/ports:** 8.64 Mbps backplane, 48,000 packets per second, 2500 virtual circuits per node.
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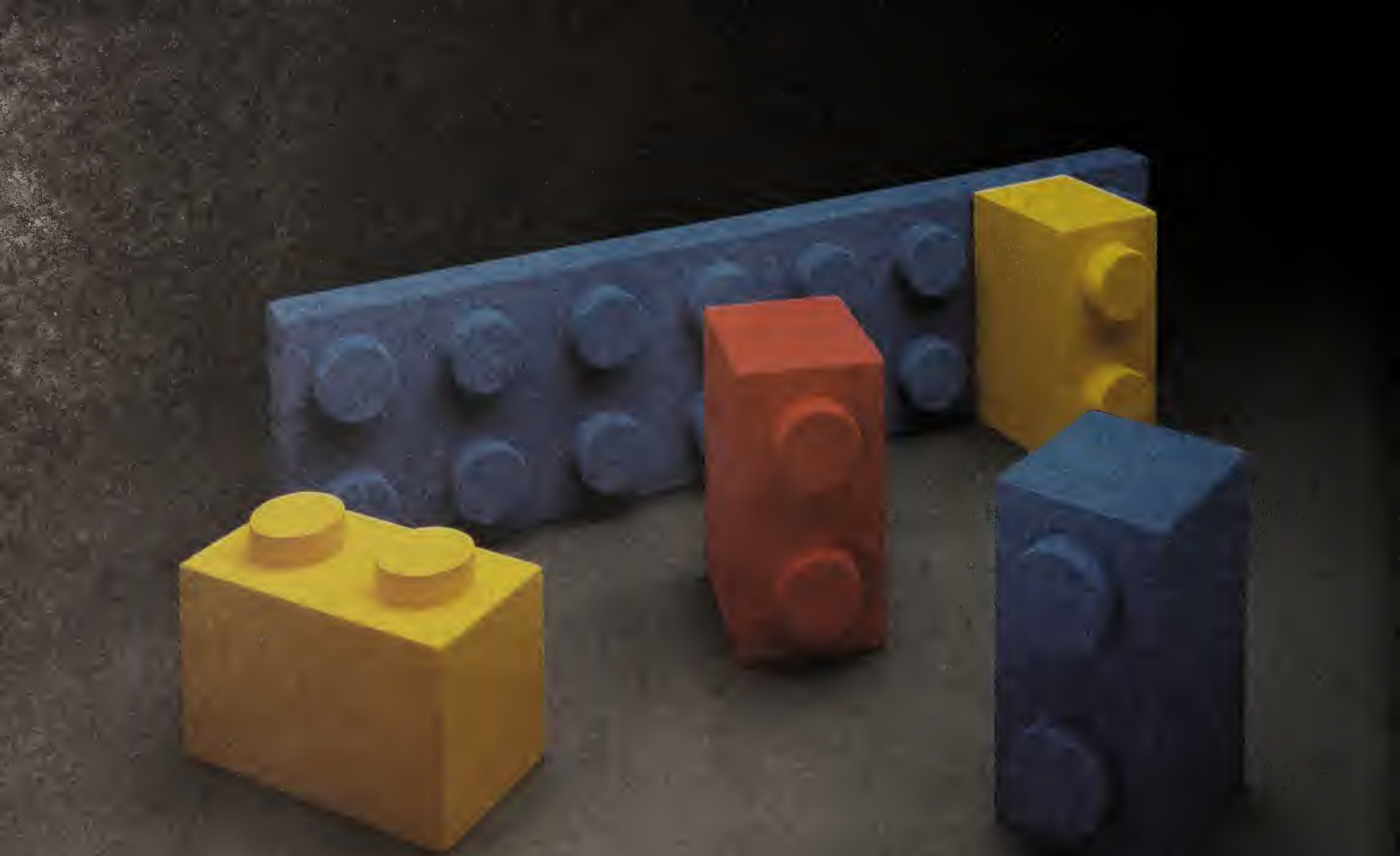

# The big idea behind the PC system you can't outgrow.

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We've incorporated all computing functions—including the heart of the computer, the CPU and its microprocessor—on plug-in boards. So as your computing needs grow, you can upgrade our general purpose 8 megahertz model to a high performance 12.5 megahertz 286 machine—or even a 16 megahertz 386. When more powerful microprocessors are available, you'll even be able to boost the performance of our top-of-the-line WYSEpc 386.

*The WYSEpc 386, one of the most powerful PCs in the business, with exceptional memory speed as well as processing speed.*

**Introducing SystemWyse.™** Our new PCs are themselves building blocks. Of SystemWyse—a comprehensive system for creating solutions. They link effortlessly with our terminals, monitors, and expansion boards in applications from desktop publishing and engineering workstations, to 16-station multi-user systems. SystemWyse uses industry standard operating systems, such as MS-DOS, OS/2, and Xenix. And it's backed by the company that produces more terminals than anyone but IBM, with over one million sold.

*It's this easy to upgrade the CPU – and boost the power – of a SystemWyse PC.*

The big idea behind SystemWyse, above all, is to adapt more readily than any other PC system to change. Because when survival belongs to the fittest, the only true survivors are those who remain fittest, longest. Call for more information. **1-800-GET-WYSE**

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## Macintosh products

**Access Technology, Inc.** has introduced a word processing package designed to work with the Apple Computer, Inc. Macintosh computer.

Called **Mindwrite Express**, the product reportedly can run over Appleshare and other network servers to read and write documents created in Micropro International Corp.'s Wordstar, Ashton-Tate Corp.'s Multimate and Wordperfect Corp.'s Wordperfect, as well as in Digital Equipment Corp. VAX and Wang Laboratories, Inc. VS environments. Spelling checker and proofreader capabilities are also included.

Mindwrite Express costs $250.

The company has also announced an upgrade of **Trapeze**, its integrated presentation spreadsheet for the Macintosh. The product is said to combine 144 spreadsheet functions with the flexibility of a page layout program.

**Version 2.1** incorporates three new features: background recalculation of complex spreadsheets; the ability to use multiple fonts, styles and sizes within a block; and a block tool pop-up menu that has reportedly been converted into a tear-off menu for greater convenience. Improvements have also been made to the formula editing, selection and block sizing functions.

Trapeze 2.1 costs $295. Registered users of Version 2.0 can upgrade for a $35 fee.

Access Technology, 200G Heritage Harbor, Monterey, Calif. 93940. 408-648-4000.

## Development tools

**Productivity Software International, Inc.** has begun shipping **Version 2.0** of **PRD Plus Productivity Plus**, a random-access memory-resident computer shorthand program.

According to the vendor, the program allows users to quickly invoke numerous keystroke-saving macros for use with almost any personal computer application program.

The updated version reportedly incorporates more than 3,500 macros, including word lists for military, government, medical, insurance and legal vertical markets. All lists can be customized by the user. An IBM Personal Computer with DOS 2.0 or higher is required.

The PRD Plus Standard Version costs $89.95, and the PRD Plus Professional Version costs $129.95.

Productivity Software International, 1220 Broadway, New York, N.Y. 10001. 800-533-7587.

**Aetech, Inc.** has announced a complete programming environment for users of IBM and compatible personal computer systems.

Called **Integrada**, the product is reportedly an Ada Programming Support Environment. It includes the tools necessary for programmers to design, code, compile, debug and document code in accordance with Milspec standards.

Features include pop-up menus, online library management, multiple file code retrieval and selectable function keys.

Integrada costs $495.

Aetech, 380 Stevens Ave., Solana Beach, Calif. 92075. 619-755-1277.

## Training

**Fliptrack Learning Systems** is now offering a self-study course for computer users who want to learn Ashton-Tate

**Fliptrack's** *Multimate tutorial*

Corp.'s Multimate Advantage II word processing program.

**How to Use Multimate Advantage II** consists of four audiocassette lessons, each approximatelv two hours long. The cassettes are used in conjunction with the actual software to teach a word processing novice to create, edit, format and print a variety of documents, the vendor said. Instruction for advanced features is also included, as well as a fully indexed reference guide.

The product costs $99.

Fliptrack Learning Systems, 999 Main St., Glen Ellyn, Ill. 60137. 800-222-3547, 312-790-1117 in Illinois.

A video networking system designed for computer teaching laboratories is now available from **Ivan Systems.**

According to the company, the **Ivan** system links the instructor's monitor with up to 60 student monitors to create a video information sharing system.

The system is said to be independent of the individual operating systems and application software residing on the attached microcomputers. The Ivan keyboard allows the instructor to send the data on his or any student's screen throughout the entire classroom.

The product is compatible with most personal computers, including IBM Personal Computers, PC ATs, XTs, Personal System/2s and compatibles, as well as Apple Computer, Inc.'s Apple IIGS and all Tandy Corp. systems. Options include the addition of a videocassette recorder, a videodisk and an overhead monitor.

The Ivan console costs from $2,795 to $4,395, depending on station configuration. Student links, instructor links and extension cables are priced separately.

Ivan Systems, 7754 Harwood Ave., Milwaukee, Wis. 53213. 800-251-4826.

Several tutorials have been released by **Dac Software, Inc.** to provide and supplement training for the Daceasy Accounting 3.0 and Dac Payroll 3.0 software packages.

The **Daceasy Accounting Video Tutor** is a two-hour tape that demonstrates, through narration and graphics, the program's installation process and illustrates logical data entry procedure. The tutorial also explains the fundamentals of accounting. The tape is available in VHS format only, and it costs $49.95.

The latest versions of the **Daceasy Accounting 3.0 Tutor** and **Daceasy Payroll 3.0 Tutor** are disk-based tutorials that reportedly guide the user step-by-step through installation to complete setup. Disk-based referenced sections are also included for those who do not want to refer to the accounting and payroll manuals. The programs cost $29.95, and current users can receive the 3.0 upgrades for $15 each.

Dac Software, Suite 800, 17950 Preston Road, Dallas, Texas 75252. 800-992-7779.

## Data storage

**CMS Enhancements, Inc.**, a producer of mass storage devices and accessories for both personal and portable computers, has introduced its Tapemaster series of tape backup drives.

The **Tapemaster 60**, the **Tapemaster 125** and the **Tapemaster 150** are half-height drives, each designed to fit inside the IBM Personal Computer, PC XT, AT or Personal System/2 systems. The model number of each tape device indicates the unit's storage capacity in megabytes. Both the Tapemaster 125 and the Tapemaster 150 streaming-tape drives include QIC-20 or small computer systems interface controllers and use standard DC500 XTD cartridges.

The Tapemaster series is priced from $895.

CMS Enhancements, 1372 Valencia Ave., Tustin, Calif. 92680. 714-259-9555.

**Dataport, Inc.** has announced an adapter system that was designed to provide portability and security for Winchester disk drives in personal computers.

The **Model ST-450** series replaces the half-height ¼-in. Winchester drives in IBM Personal Computers and compatibles.

It also offers an integral off/on switch, keyed or keyless locking or an automatic power off/on switch that works in conjunction with the locking function.

According to the vendor, the product comes with a mainframe mount, a Winchester adapter and an installation manual.

The Model ST-450 costs $165.

Dataport, 852 Via Alondra, Camarillo, Calif. 93010. 805-388-2700.

## Peripherals

A personal computer-based scanning system designed for office environments has been announced by **Kurzweil Computer Products, Inc.**

According to the vendor, the **Discover 7320 Model 30** features a 16-MHz intelligent character recognition coprocessor card, column recognition, a flatbed scanner and an optional 30-page document feeder. Recognition speed is reportedly 40 to 60 char./sec.

The scanner operates with IBM Personal Computer XTs, PC ATs or compatibles with 640K bytes of memory. Microsoft Corp. MS-DOS 3.0 or higher is also required.

The Discover 7320 Model 30 costs $13,950. The 30-page document feature costs an additional $550.

Kurzweil Computer Products, 185 Albany St., Cambridge, Mass. 02139. 617-864-4700.

**Kurzweil's** *scanning system*

A handheld remote control device designed to provide Apple Computer, Inc. Macintosh users flexibility while giving desktop presentations has been announced by **Eastman Kodak Co.**

*Continued on page 48*

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Honeywell Bull

*Continued from page 47*

Scheduled for availability this fall, the **Kodak Datashow Presentation Remote** can be used in conjunction with video projectors, large-screen monitors, the Kodak Datashow HR/M Projection Pad and other Macintosh-driven projection devices, the vendor said.

The remote is compatible with Microsoft Corp.'s Powerpoint 2.0, Manhattan Graphics' Readysetshow and Artroundup by Dubl-Click, Inc. It supports the Macintosh SE, the Macintosh II and the Apple IIGS. Pricing will be set at a later date.

Eastman Kodak, 343 State St., Rochester, N.Y. 14650. 716-724-3273.

## Board-level devices

Several add-in boards for IBM Personal Computers and compatibles are now available from **Aedex Corp.**

The **BCZ-180**, a board for Zenith Data Systems Corp. 181 and 183 IBM PC-compatible computers, offers bar code reading, a built-in 1,200 bit/sec. Hayes Microcomputer Products, Inc.-compatible modem and optional battery-protected random-access memory. A software-transparent wand or laser scanner is used for bar code reading. RAM is available in 256K- or 1M-byte capacity and can be used as a RAM disk to supplement the disk drives.

The BCZ-180 costs $995.

The **SEP-25** board allows users to boot a PC without a disk drive and provides password protection. The board boots the software directly from its resident erasable programmable read-only memory or static RAM chips. For security applications, a proprietary data string can be located and interrogated at a specific memory location to ensure authorized use of the application.

The SEP-25 costs $95.

Designed for bar code printing applications, the **PPP-50** board plugs into an expansion slot in any IBM PC, XT, AT or compatible computer. The product also supports the IBM Personal System/2 Models 25 and 30. Bar codes, alphanumeric characters and line graphics can be created with the addition of command strings in any print statement. Commands can be used in application software, databases, word processors and spreadsheets to generate label formats.

The PPP-50 costs $295.

Aedex, 1070 Ortega Way, Placentia, Calif. 92670. 714-632-7000.

A multiple-resolution color graphics system for the Apple Computer, Inc. Macintosh II has been introduced by **Rasterops Corp.**

The **Colorboard 108** reportedly provides users with 256 colors that may be displayed simultaneously and has multiple resolution capabilities that range up to 1,024 by 768 pixels. It also provides a resolution of 640 by 480 pixels for compatibility with Apple's standard color monitor.

The product reportedly supports both 1-bit monochrome and 8-bit color modes in all resolutions and is offered in both 16-in. and 19-in. configurations.

The Colorboard 108 costs $1,495.

Rasterops, 10161 Bubb Road, Cupertino, Calif. 95014. 408-446-4090.

A memory expansion board designed for the IBM Personal System/2 Models 50 and 60 has been announced by **STB Systems, Inc.**

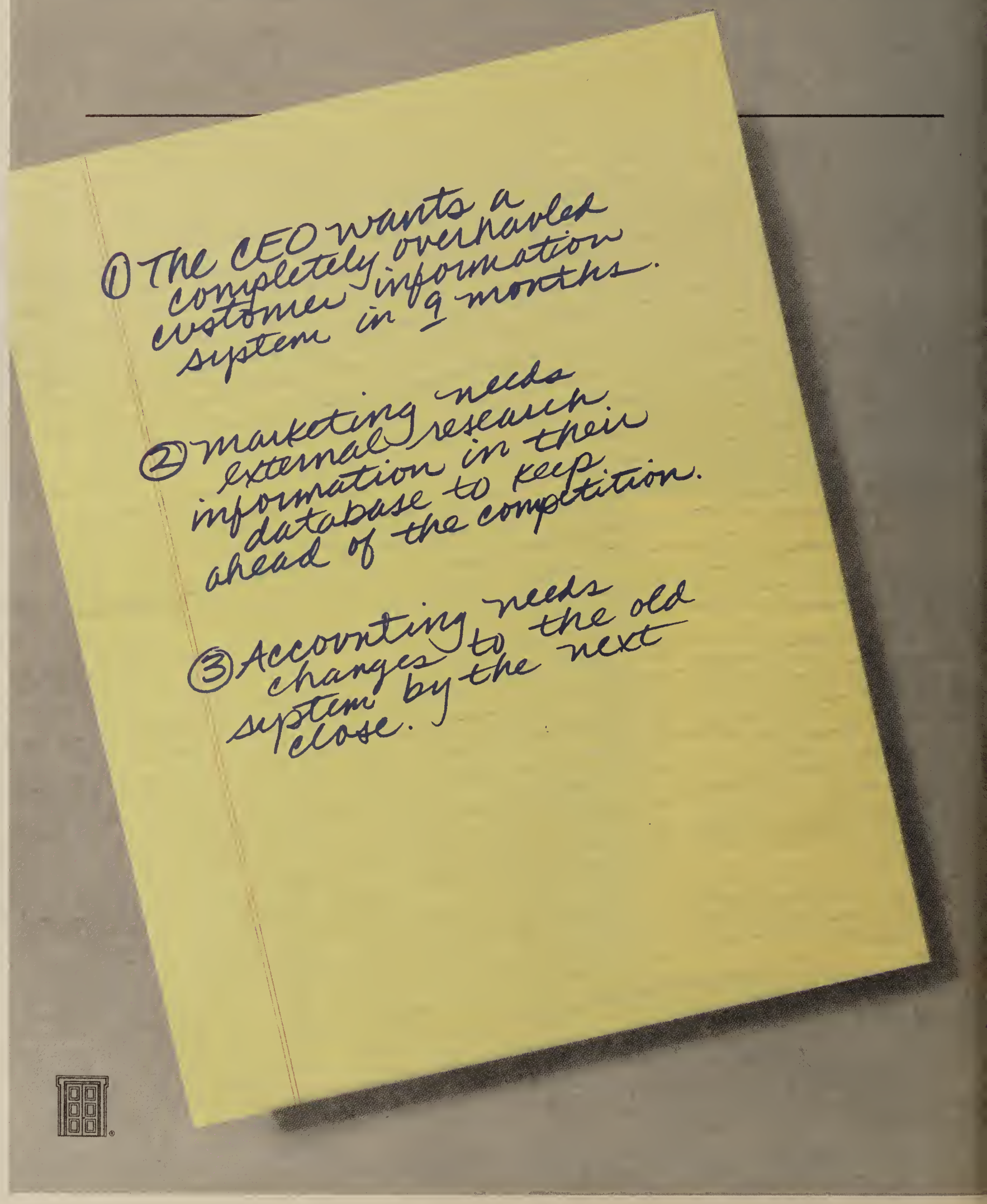
**Rapidram 2/8** offers a reported 10-MHz zero-wait state random-access memory capability and up to 8M bytes of conventional, extended or Lotus/-Intel/Microsoft Expanded Memory Specification 4.0, the vendor said.

It consists of a main board with a standard 2M bytes of memory and a daughterboard option to provide up to 8M bytes of memory in 2M-byte increments. The vendor will provide its Rapidmap Utility Software with each board to allow the user to remap DOS into the 10-MHz, zero-wait state memory.

Rapidram 2/8 costs from $1,695 to $5,895, depending on memory configuration.

STB Systems, Suite 210, 1651 N. Glenville, Richardson, Texas 75081. 214-234-8750.


# How Would You Deal With These Problems?



# Barney

FROM PAGE 37

execs? What kind of platform would there be if one of them, say Microsoft's Bill Gates for instance, were to run for president?

We can see it now. Gates, playing off the Seattle Miracle theme, would promise Basic rights, a chicken in every pot and an 80386 personal computer running OS/2 on every desk. This is just the beginning.

Here is an entirely unauthorized account of the Gates platform:

- The Postal Service replaced by E-mail.
- Star Wars written by himself.
- Lyndon Larouche forced to use Topview repeatedly.
- C as our second language.
- The statute of limitations on the shipment of previously announced software extended to 10 years, except for Lotus and Ashton-Tate.
- Welfare mothers taught to use, not wash, Windows.
- George Bush forced to actually live in Texas and work as a salesman for Radio Shack.
- The U.S. exchanging software for hostages.
- In a sly but ultimately kind gesture, Gorbachev getting a copy of Dbase with no documentation. After scratching his head while figuring out how the program works, his splotch would be completely worn off.

**Scrape every barrel.** The Open Software Foundation must want a graphical user interface real bad. It seems that the organization has solicited proposals from nearly everyone its members have run across, said a source at a major micro vendor, who mentioned that maybe I should submit one.

Picture this: A down-and-out drifter hits up a member of the OSF for some spare change. "Sure," the OSF guy says. "But only if you propose a decent interface."

**Wheelin' and dealin'.** Throughout much of the 1970s and into the early '80s, George Mount was arguably the premier bicycle racer from the U.S. Mount forged a path to the European professional racing circuit and finished an astounding sixth in the 1976 Montreal Summer Olympics.

> George Bush forced to actually live in Texas and work as a salesman for Radio Shack.

Now Mount has switched gears and joined the grueling PC race. Instead of racing and training 500 to 600 miles per week, he spends his time as the Gamma Fax (PC to facsimile converter) product manager for Gammalink in Palo Alto, Calif., and rides just a couple of times a week. But if Mount sells as fast as he rides, pretty soon we'll all be using Gamma Fax.

So if you are in the market for a facsimile, and maybe need advice on pedaling technique, give George a call and tell 'em CW sent you.

**This space is your space.** Wanna get your name in print? Wanna tee off on the latest bonehead move of your least favorite vendor? Just hate the world? Then write or gimmee a call (1-800-343-6474). Maybe you'll become famous for 15 minutes.

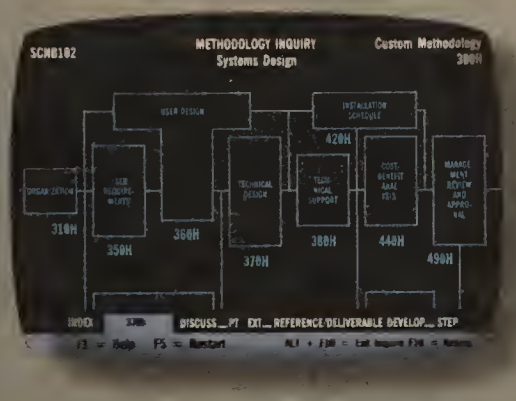
Barney is a *Computerworld* senior editor, microcomputing.


# Start with a strong FOUNDATION.™ Introducing the Integrated Software Solution for System Development Problems.

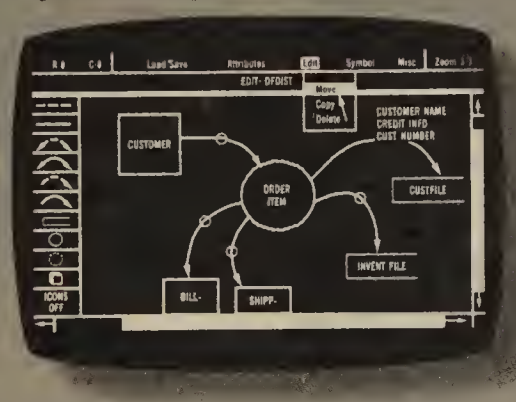
**FOUNDATION is a full life cycle CASE environment for planning, designing, installing and maintaining systems faster than you've ever anticipated.**

FOUNDATION provides the integrated components to tackle large and small system development projects more quickly, more efficiently and with better quality results than you thought possible. Integration virtually eliminates the standard snafus of single function tools. Redundancies. Incompatible functions. Multiple languages.

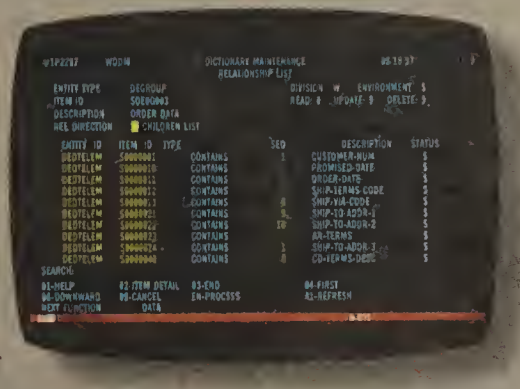
**METHOD/1™ for planning.**
METHOD/1 provides an *automated* system for project estimating, work planning, project control and management change control. This established life cycle methodology has been used to deliver thousands of successful applications.




**DESIGN/1™ for system design.**
DESIGN/1 is a dictionary-based system for analysts and designers to develop data flow diagrams, paint screens and reports, plus facilitate data design and maintenance. To facilitate better system design, the prototyping facility encourages user participation.




**INSTALL/1™ for code generation and maintenance.**
INSTALL/1 uses the design specifications from DESIGN/1 and generates a production COBOL program. It promotes standardization during the development process by generating everything necessary for an on-line application: records, screens, SQL, logic and copybooks. Configuration management and testing aids complete the system. When maintenance is required, changes are resolved throughout the system automatically.

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# On the couch

CONTINUED FROM PAGE 37

and medium-size user organizations. The cost of using Dbase, if employed for only simple chores, may be more than it is worth. But if standardization is important, or if the user base can persevere, then it will be rewarded with useful new features.

Ashton-Tate has also implemented a laundry list of new features for the competent user or the developer. First, the company has added SQL capabilities. There are two ways to employ these. The first is to use actual SQL commands embedded in the application itself. There is also an interactive SQL mode available to the user, which is clearly a competitive response to the incursion of Oracle Corp. and to the recent announcement of Oracle and Dbase-cloner Wordtech Systems, Inc. to join forces in the personal computer database market.

As with nearly all other SQL implementations, this is clearly not intended for the casual user. The interface is arcane, and most generic tasks are better accomplished by using the Control Center.

### Zero to 60 in just...

Another key improvement is in the speed of execution. While Dbase III was often derided for being slow, Dbase IV is very fast. Better system management in the area of file relationships should add speed as well.

The report writer has also been greatly improved. Calculated fields, running page numbers, headers, footers and summaries are all part of the new standard of report-writing capabilities. These enhancements bring Dbase IV up to par with other systems and eliminate a sore spot for many users.

The multiple index capability will be of great interest to power users. Dbase IV allows for 47 indexes per file. This news may cause Dbase III Plus users some concern, but fear not. When the database variable characteristics are defined, the user determines if that variable is indexed. Dbase IV then keeps track of the indexing.

### No memory miser

On the negative side, this is not a small program. Unlike Dbase III, the new product will no longer run on floppy-based systems. The beta-test version we used came on nine system disks and required a minimum of 640K bytes of random-access memory. In fact, using memory-resident programs can create memory problems.

Today's Dbase users will undoubtedly want to consider and evaluate Dbase IV prior to making any purchase decisions. The product has important enhancements and provides users with a greater degree of relational capability. The Control Center allows for easy-to-use, straightforward organization of file relationships, and Dbase's increased indexing and variable limits will take the confusion and organizational chaos out of relational computing.

Developers and power users will be kept busy enjoying Dbase IV's new financial functions, macro expansions, increased command line length, built-in compiler and SQL. For existing Dbase users, this version offers plenty to spark renewed interest. And new users may discover an accessible relational database with SQL capability.

# Apple expo

CONTINUED FROM PAGE 37

International, Inc., was generous last year in praise of Hypercard. That was then. This is Bajarin now. "Hypercard didn't come of age this year."

A survey of corporate Macintosh users showed that some are using Hypercard for organizing phone lists and calendars, but have not taken the time to develop innovative applications.

Although users like Michael Cromar, vice-president of information resources at American President Companies Ltd., are investigating departmentwide applications based on Hypercard, they are far from implementation. Billed as the development tool for everyman, Hypercard simply proved more complicated than Apple led users to believe.

Hypercard has also been hampered by the dynamic random-access memory (DRAM) chip shortage. To operate effectively, Hypercard requires at least 2M bytes of RAM. But because of the shortage, Apple is shipping Macintoshes with no more than 1M byte of RAM.

Memory prices have also impacted Multifinder, Apple's multitasking-like operating system. Machines with less than 3M to 4M bytes of RAM cannot take advantage of its capabilities.

Communications offerings put forth at last year's show have also been a disappointment. At Macworld/Expo '87, Apple unveiled Appleshare PC, Apple File Exchange and the Apple Fax Modems, and communications vendor 3Com Corp. introduced the Ethertalk Interface Card.

Appleshare PC has received a lukewarm reception because few corporate users want to use Macintoshes as dedicated file servers. The modems have been late in shipping, and many have opted to use third party Dataviz, Inc.'s file exchange product because it supports more formats than Apple File Exchange, said Thomas White, president of Infonetics, Inc., a Santa Clara, Calif., communications consultancy.

White said the communications introductions made at last year's show lacked the sophistication demanded by corporate users. That situation is changing. "Apple has come of age since then," he said.


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C&C
Computers and Communications

# SQL can often be just the ticket for DBMSs

*Second in a two-part series on choosing a PC DBMS*

BY FABIAN PASCAL
SPECIAL TO CW

SQL is a great data-access language, but its inherent relational capabilities must be accessible through front-end tools. One problem with systems that add SQL as an interface is that their tools are based around procedural languages and cannot take advantage of SQL's set processing.

There are three constituencies for which products must provide SQL-based tools. For end users, some of whom need to be insulated from direct SQL syntax, a product should provide menu-, prompt- and graphics-driven facilities to define, modify, query and update databases in ad hoc mode. Query-By-Prompt, Query-By-Example, default forms and reports are examples of such facilities.

Applications developers can also benefit from these capabilities, but may require nonprocedural facilities such as form painters and menu, report and application generators, which are collectively and vaguely termed "fourth-generation" tools. DBMSs should also allow SQL to be embedded statically or dynamically in third-generation languages such as C, Cobol, Fortran, Pascal or Ashton-Tate Corp.'s Dbase, but only for legitimate procedural needs. Procedural code should not be employed because of lack of, or weaknesses in, more productive tools, or just because users are not sufficiently fluent in them. That would defeat the relational intent.

Finally, system utilities for housekeeping tasks such as data import and export, backup and recovery, security management, authorization management, journaling and so on should also be provided.

It is important to realize that how tools incorporate SQL is a more subjective matter, depending on user preferences. Nevertheless, relational principles and SQL help discipline and simplify tool evaluation. Tools based on SQL are likely to be more consistent, integrated, productive and easy to learn and use.

Those who require personal computer access to databases on various platforms, or want to ensure a growth path for PC applications, should no longer accept the dumb terminal emulation and file-transfer solutions of the nonrelational world. In an SQL environment, they should insist on cooperative capabilities where tools running on the personal computer can access, depending on needs, databases residing on minis, mainframes or even on other, remote microcomputers.

Unfortunately, at the implementation level, connectivity issues are nontrivial. This is further complicated by non-DBMS factors — hardware, software and especially communication layers between participating databases — and by the vague and confusing claims of vendors.

There is no magic way to simplify this, but one useful and important distinction is between server/requester architectures and distributed DBMSs, as defined by Chris Date's 12 rules of distributed database.

With the first approach, separate databases reside on different nodes and can be accessed individually or collectively if the user or application knows what and where they are. Such architectures tend to be easier to implement and administer but put more burden on users, especially applications developers.

The opposite is true for the distributed approach, in which the separate databases are made to appear as one unified "as-if-local" database to the user. This simplifies things for users but complicates implementation and system administration. In practice, vendors implement hybrids of the two, and users are well advised to match the capabilities offered with their specific needs very carefully.

From a PC perspective, the evaluation process should consider the capabilities underlying the two approaches within a PC local-area network, in a heterogeneous network with PC participation and in a combination such as a LAN gateway to host.

It could be argued that a distributed DBMS is better suited to PC LANs because they enjoy more hardware and communication homogeneity and closer interaction and coordination between users. While more widely dispersed heterogeneous networks have more to gain from a distributed DBMS, the strain on design, administrative and political capabilities may not be acceptable at present. Server/requester solutions may prove more digestible for such environments.

Relational technology provides a set of more objective criteria for evaluation in three major areas: the SQL implementation, user tools and connectivity. An ideal product is not likely to be found just yet. Instead, users should approach the selection process with a good understanding of their prioritized needs and be prepared to optimize the trade-offs accordingly.

A disciplined evaluation, while more demanding, will avoid the costly consequences of the arbitrary, simplistic or vendor-guided evaluations currently employed in the PC environment.

---

Pascal is a Washington, D.C.-based independent analyst and consultant specializing in relational DBMSs and SQL on microcomputers and is affiliated with the Codd & Date Consulting Group.

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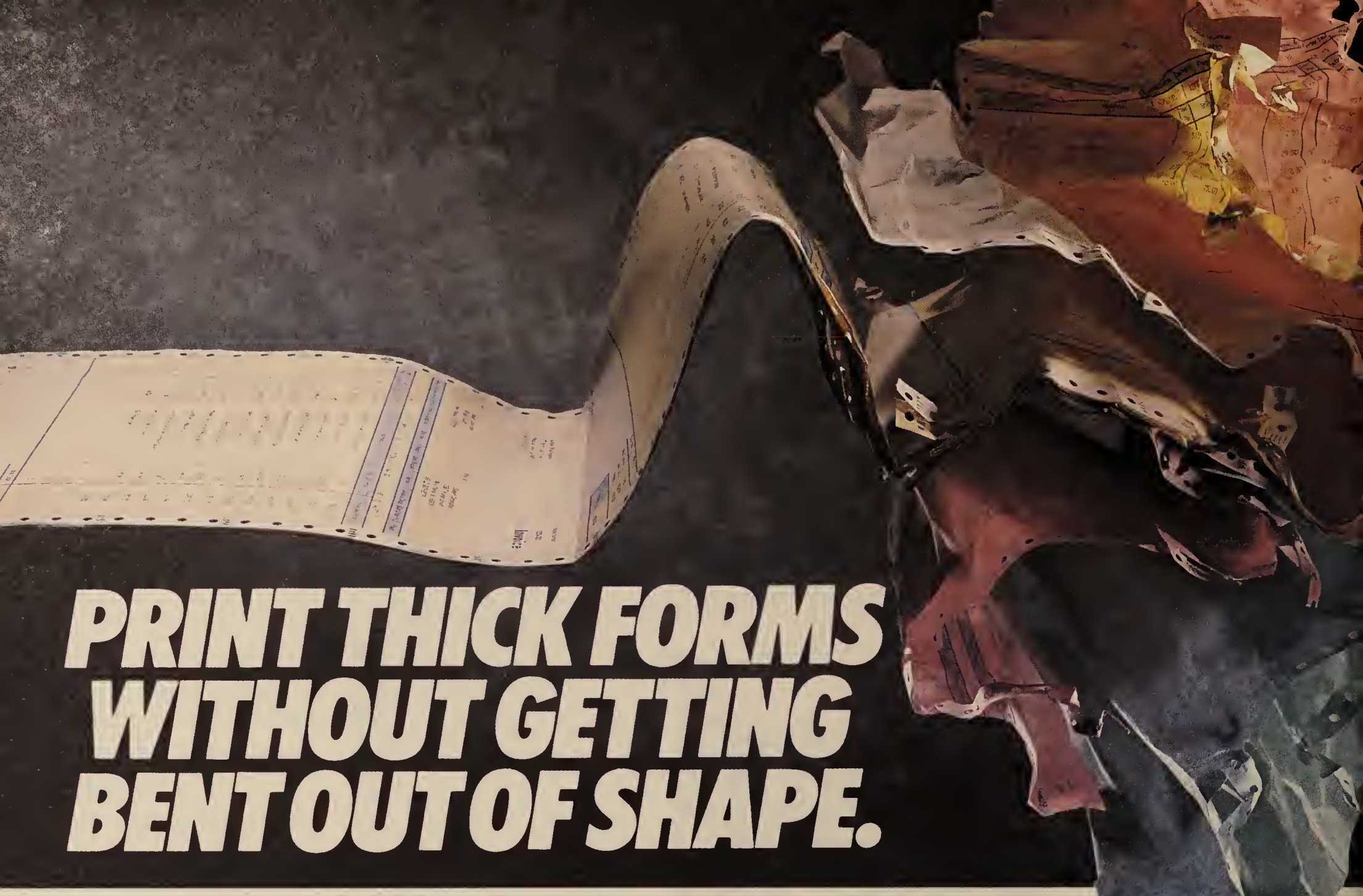

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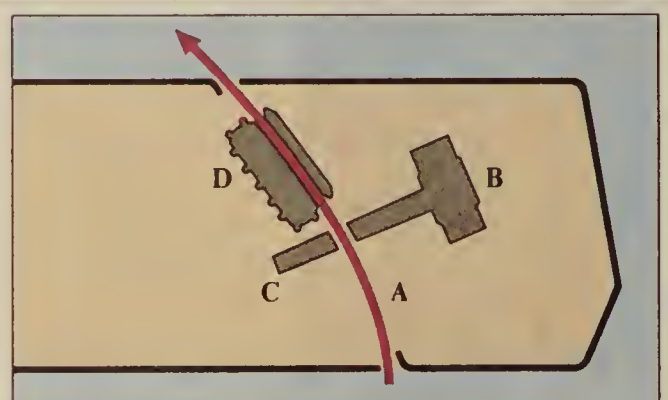


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But users that have invested in matrix switches report great value in other features as well.

*Continued on page 58*

# State water date changes flow

BY KATHY CHIN LEONG
and ELISABETH HORWITT
CW STAFF

SACRAMENTO, Calif — A $3.7 million T1 network for the California Department of Water Resources will not magically yield water to this drought-ridden state, but the fiber-optics-based net is expected to give a minimum two-second response time to users while yielding $1 million savings in leased-line costs.

The department plans to replace a 20-year-old, 1,200 bit/sec. dial-up network with 92 System 9000 T1 multiplexers from Digital Communications Associates, Inc. These will handle communications traveling between 19.2K and 56K bit/sec. over a fiber-optic backbone.

The goal is to provide faster, more reliable communications between the computers that monitor and control California's State Water Project, according to Gene Delfin, chief of control systems at the department.

The system is composed of pumping plants, hydroelectric power plants and some 555 miles of aqueducts and pipelines. It collects excess snow and rainwater runoff from Northern California mountain regions, stores it in reservoirs and distributes it as needed to two-thirds of the state's population.

Currently, Hewlett-Packard Co. and Honeywell Bull, Inc. machines at five area centers control operations at hydraulic sites and at pumping and generating plants within their areas. These systems send data on water flow, pressure, temperature and power output to the central Univac computer in Sacramento.

Using 1,200 bit/sec. lines, it can take as long as 20 minutes for the master computer to receive an update on these systems; with the new network, it could take as little as two seconds, Delfin said.

This faster response time will allow project systems to be controlled and monitored from the Sacramento computer center, Delfin said.

In a planned configuration, for which a request for proposals

*Continued on page 59*

## Inside


- Pacific Bell looks at X.400 E-mail. Page 57.
- Interlan adds OS/2, OSI support. Page 59.
- Xerox gives PC users XNS access. Page 60.


# FCC urged to move on investigation

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Business network associations are escalating their campaign to get the Federal Communications Commission to resolve a 3-year-old complaint that local access charges for high-speed data services are grossly inflated.

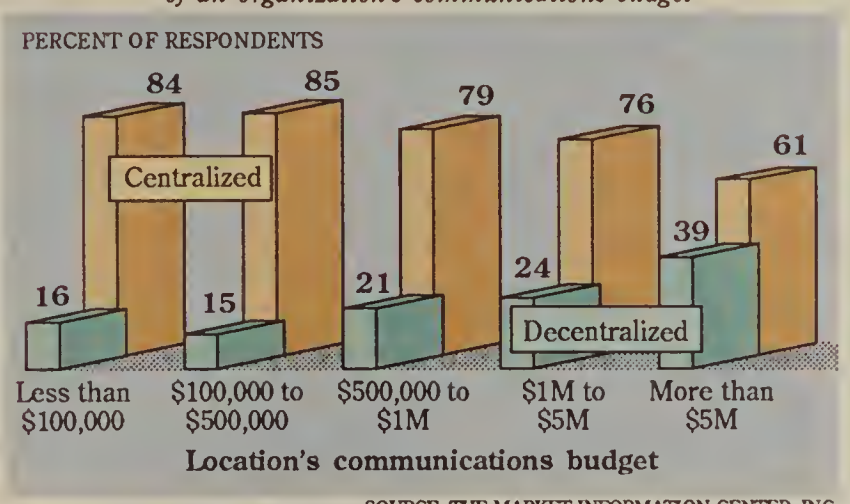
The campaign is being waged by the International Communications Association (ICA) and the Ad Hoc Telecommunications Users Committee, whose members include Fortune 500 firms such as American Express Co., The Travelers Corp., American

*Continued on page 57*

## Data View

### Small budgets lean toward centralization

*A user survey suggests that decentralization is related to the size of an organization's communications budget*




SOURCE: THE MARKET INFORMATION CENTER, INC.
CW CHART

AS/400

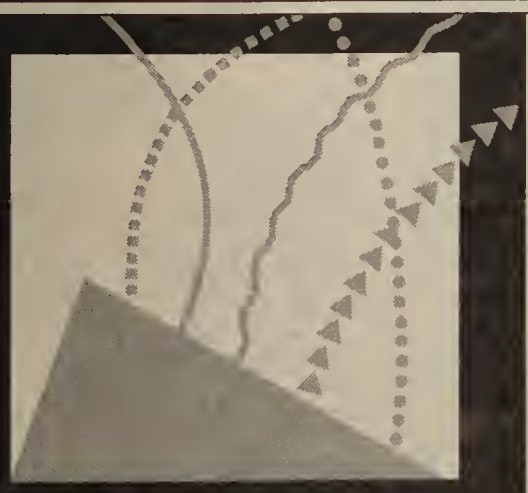
# Good-bye to add-ons?

BY STEVE JACKOWSKI
SPECIAL TO CW

IBM's Application System/400 won't solve all the communications problems that have confounded System/36 and 38 users, but it will come close to drying up much of the thriving add-on communications product market for these systems.

As part of the June announcement of the AS/400, Ellen Hancock, vice-president and general manager at IBM's Communications Systems Division, said that the

*Continued on page 57*

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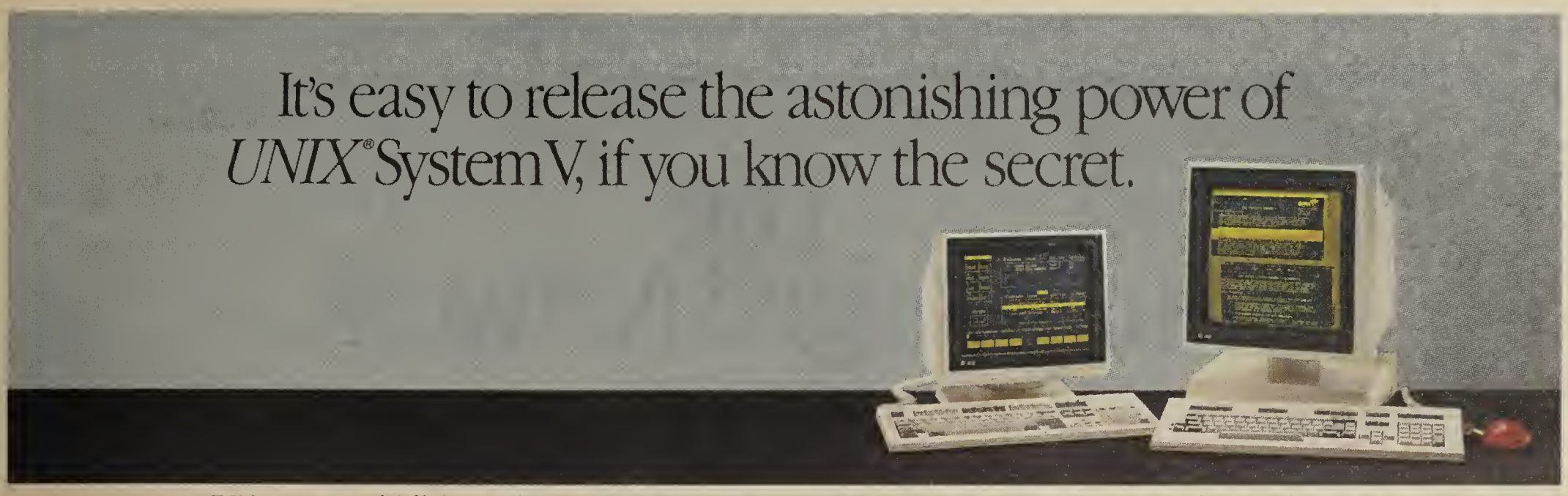

AT&T 605 BCT terminal (left) shown with AT&T PMX/TERM menu. AT&T 630 MTG terminal (right) displays text editing on two hosts, simultaneously.

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AT&T 620 MTG terminal (left) supports common business graphics interfaces. AT&T 615 MT (right) is the recommended multitasking UNIX System Administration terminal.

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AT&T 630 MTG terminal: Provides dual-host access and down-loadable applications (left); provides high resolution display of engineering or business graphics (right).

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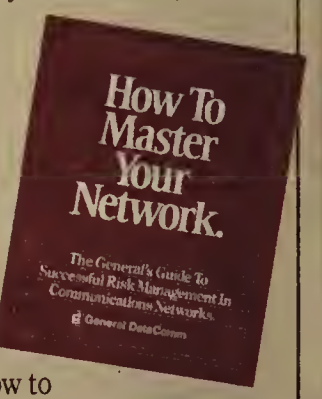


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# Pacific Bell first to consider X.400

BY KATHY CHIN LEONG
CW STAFF

BURLINGAME, Calif. — Pacific Bell and Digital Equipment Corp. recently unleashed an electronic mail pilot targeted at California businesses. The move makes Pacific Bell the first among the nation's telephone companies to delve into providing X.400 electronic messaging.

As for DEC, which supplied the software and hardware, the project is expected to kick off plans for similar E-mail programs that will be offered to other former Bell operating firms.

Lee Camp, Pacific Bell's manager of information services, said the project comes as the result of the March Federal Communications Commission decision to allow telephone companies to enter the electronic messaging, voice messaging and gateway markets.

Four separate groups will test the technology under a pilot known as Pacific Bell Connection, according to Jeanne Bracken, director of Pacific Bell's message handling systems.

### At the heart

The E-mail project supports the X.400 standard and requires a personal computer and modem or terminal. The heart of the system includes software developed by DEC, five DEC 8550s and seven Microvaxes.

Testing will begin in the next few months with Santa Clara University, The Easter Seal Society, Foundation Health Corp. and the National Centrex Users Group. The service's ease of use and functionality will be evaluated.

Pricing decisions will be made after completion of the tests in March. Any resulting service offerings will target business and residential customers and must be approved by state regulators.

# FCC

FROM PAGE 53

Airlines, Ford Motor Co., Westinghouse Electric Corp. and J. C. Penney Co.

In two different proceedings late last month, the users groups said that businesses have been overcharged by hundreds of millions of dollars for connection of private lines to local carriers' networks. Meanwhile, the FCC's investigation of "strategic pricing," which began in 1985, shows no sign of reaching a conclusion, group spokesmen said. They claimed the investigation is becoming a "giant regulatory wastebasket."

The strategic pricing controversy has focused mostly on the legality of above-cost pricing for high-speed, digital data transmission services.

Users' primary concern is that carriers are using so-called strategic pricing — that is, pricing based on market conditions rather than actual costs — for special-access rates. The carriers have targeted the rates to earn returns ranging from 12% to 39%, although the carriers themselves are limited to a 12% rate-of-return.

The FCC has permitted these rates to become effective, subject to the outcome of the strategic pricing investigation. "As a practical matter, users are paying these rates every day," noted Brian R. Moir, the ICA's counsel.

If the investigation concludes that strategic pricing is illegal, users could potentially receive huge refunds, although the users groups said that refunds are an imperfect remedy.

### For protection

The local exchange carriers have defended strategic pricing on grounds that it gives them pricing flexibility and that the higher prices compensate for users' migration from switched-access to special-access services.

Frustrated by the "glacial" pace of the FCC investigation, the ICA filed suit last December to obtain a federal court order forcing the FCC to rule on the issue, Moir said. The court case is still pending, with the FCC's response due later this month.

FCC officials could not be reached for comment on the issue, but the agency is expected to argue in court that it has been diligently working on the complex investigation.

According to one published report, the FCC's Common Carrier Bureau was prepared last month to propose closing the investigation and endorsing strategic pricing. However, FCC Chairman Dennis R. Patrick was unable to get other commissioners to vote for the proposal.

The users groups are pressing their case in another proceeding: the FCC's proposal to institute a price-caps regulatory system for the local exchange carriers [CW, May 16].

Users are particularly concerned that high special-access charges will be incorporated into the price-caps system, which would use existing rates as a baseline and then adjust the price ceilings annually.

The FCC also has yet to resolve users' concerns about rate churn, in which carriers make numerous rate changes in a short period of time, the ICA said. This makes it difficult for network managers to plan and budget for communications expenditures.

# Good-bye

FROM PAGE 53

new system provided "any-to-any connectivity options." If this is true, then IBM is finally filling some important communications gaps for the approximately 100,000 domestic System/36 and 38 users, who up until now have had to turn to third-party vendors for protocol conversion, file transfer, gateway switching and concentration.

While System/36 and 38 products have provided what are possibly the best user and programming environments in the IBM product line, communications options for more sophisticated users have always been inadequate.

Many customers complained about insufficient and costly communications ports. Another sore spot has been poor dial-up capability, which results in tailgating and the occasional hanging of either ports or the processors themselves.

### Forced out

Because IBM had closed access to communications, or low-level device and protocol, interfaces for its System/36 and 38, users could not develop their own communications software to resolve these issues. Instead, they were forced to rely on third-party vendors, which addressed the problems with external software and hardware products.

Although most of the AS/400's communications features are not slated to be out until November, it is fairly certain that when they do arrive, they will challenge many third-party connectivity products.

The AS/400 will support direct attachment of ASCII devices, which will eliminate much of the need for protocol converters. The maximum number and type of communications ports have been expanded, which will facilitate dial-up communications and reduce the need for concentrators and switches.

But perhaps most significant, the AS/400 will provide direct IBM Token-Ring network connections. While some System/36 models offered this feature, the AS/400 will provide an optional PC support program that will permit the following functions:

- Concurrent communications with up to 32 AS/400 systems.
- Five simultaneous display and printer emulation sessions.
- Bidirectional file transfer capabilities.
- SQL-like database query features under both user and program control.
- Virtual print functions, both host and PC.
- Concurrent file sharing among PCs and AS/400 systems.
- A messaging system.

> THOUGH Hancock's "any-to-any" connectivity may seem to have been realized with the AS/400, there are still a few holes in IBM's offerings.

The addition of Distributed Data Management support, Personal Computer XT/370, File Transfer PRPQ — or Programming Request for Price Quotation — and the Personal Computer Distributed Systems Node Executive to the AS/400 will permit construction of fully integrated 370, AS/400 and PC LAN environments with centralized network control.

With the AS/400, IBM Token-Ring LANs can use PCs, minis — the AS/400 — or mainframes as servers and can distribute applications and database functions, all in an IBM framework. They can thus meet the challenge put up by the major PC LAN vendors.

To top it off, IBM is taking off the gloves on pricing. A basic PC support license with authorization to produce 25 PC copies costs as little as $1,250, considerably less than most other micro-to-LAN and micro-to-host communications packages. Few connectivity vendors will be able to compete effectively with IBM in these environments.

### What's left?

Although Hancock's "any-to-any" connectivity may seem to have been realized with the AS/400 announcement, there are still a few holes in IBM's communications offerings. This will allow some non-IBM communications product vendors to survive in the AS/400 market.

IBM still limits its X.25 support to transport of synchronous data link control across packet-switching networks, so outside vendors may find some opportunity for protocol conversion that operates across packet networks.

Still, with native ASCII device support now a part of the AS/400, it would not be a major step for IBM to support X.28 and X.29 — the connection of ASCII devices across packet networks — in a future release.

Furthermore, IBM does not appear to have enhanced the AS/400 so that it avoids the failings of the System/36 and 38 when acting as both a host and an intermediate node on an Advanced Peer to Peer Networking (APPN) system.

Like the above systems, the AS/400 does not seem to have the processing power to simultaneously run applications while switching and routing transmissions to other nodes on an APPN network. That offers some hope for third-party switching and concentration products.

The most promising territory of all for communications products vendors will probably be connectivity to non-IBM environments. The "any-to-any" claim seems to apply to previously incompatible IBM products.

Although the AS/400's ASCII workstation support will permit connection of terminals such as Digital Equipment Corp. VT100 and VT220s, that is not the same as connecting to a VAX.

IBM has made a statement of direction for Open Systems Interconnect support, but no plans have been disclosed for connectivity through Transmission Control Protocol/Internet Protocol (TCP/IP), the de facto standard in education, engineering and government environments. An IBM spokesman, asked about the vendor's plans in this area, responded that the 9370, which has Ethernet and TCP/IP connectivity, is addressing those markets.

All in all, however, the AS/400 communications announcements are impressive. This may represent the first time that IBM has offered fully integrated connectivity from mainframes through minis to PCs and LANs without awkward, inefficient interfaces between fundamentally incompatible architectures. Most of the communications problems and limitations found in the System/36 and 38 have been addressed in the AS/400.

> IBM HAS made a statement of direction for Open Systems Interconnect support, but no plans have been disclosed for connectivity through TCP/IP.

While this new, nearly seamless connectivity may sound a death knell for many vendors whose sole income resulted from resolution of communications problems, it is favorable for IBM users. Many will justify the move from the System/36 and 38 to the AS/400 on the basis of connectivity alone.

Jackowski is lead consultant at Syzygy Communications, Inc. in Scotts Valley, Calif.

# Korostoff

CONTINUED FROM PAGE 53

Organizations whose data centers have become increasingly complex often find cable management to be a burdensome task. The sheer number of cables can be overwhelming, and any necessary changes represent a more than tedious task.

Barry Charton, director of marketing at Southboro, Mass.-based matrix switch vendor Bytex Corp., says his users prefer investing in a matrix switch to buying more patch panels when resolving problems caused by a large number of lines and frequent adds and changes.

In addition to being impractical in the environments outlined above, patch panels lack the matrix switch's ability to centrally monitor network activity and perform testing on all attached lines and equipment.

Charton describes a common scenario: Users report problems with one of the lines in the network. A device attached to the matrix switch is used to test the line for errors. Once the tests are complete, the network manager can switch in a spare line from the matrix switch and later send out a repair person to check out the problem.

### Matrix switching

Several IBM product introductions in recent years have moved matrix switches onto the corporate buy lists of businesses that follow this rule of thumb: If IBM endorses a technology, it's OK.

IBM gave an initial nod to the market in 1985 with the introduction of its 3728 matrix switch. More recently, it further blessed this arena with the announcement of the 3745, a communications processor with hot-sparing capability, according to Asher Gendelman, product manager for matrix switches at Dynatech Communications in Newington, Va.

Hot-sparing for the 3745 means that operations can be switched to an optional secondary processor when the first goes down. However, devices that are attached to the 3745 cannot be hot-spared, as they can be with a matrix switch. For example, the user cannot switch on a backup modem to take over from a faulty modem.

The introduction of a front-end processor with hot-sparing capability shows that IBM is aware that its users need that functionality. But Gendelman elaborates on the 3745, pointing out that while it does offer front-end processor sparing, it should not be considered an alternative to a matrix switch.

Gendelman claims it ". . . does not offer the test, monitor and access features associated with matrix switches and does not allow for the hot-sparing of network components, such as modems and multiplexers."

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Korostoff is a senior telecommunications market analyst at International Data Corp. in Framingham, Mass.

# AT&T tries EDI — again

BY ELISABETH HORWITT
CW STAFF

MORRISTOWN, N.J. — AT&T has released a statement of direction outlining plans to enter the electronic data interchange (EDI) market in the first half of 1989.

The EDI service, which will be formally announced in the third quarter, will provide translation of business documents based on the ANSI X.12 EDI standard, AT&T spokeswoman Ruthlynn Newell said.

This will permit direct exchange of documents by computers that format business documents differently. AT&T's electronic mail service, AT&Tmail, will provide document transmission for the EDI service.

The service will also support the CCITT X.400 E-mail standard as a common "envelope" for sending messages, AT&T said. This will provide intervendor networking between AT&T's EDI service and other X.400-compliant services and computers, "which is necessary for a solid EDI offering," Newell said.

AT&T entered the EDI market once before, through its now-defunct Net 1000 service. However, that service ran into problems because "Net 1000 was supposed to be all things to all people" and document exchange standards had not matured, Newell said.

"Now we have a clear direction with X.12 and X.400 and a more mature marketplace ready to receive EDI," she added.

AT&T was wise to wait for its customers to start demanding EDI before it reentered the market, said Victor Wheatman, an analyst at Input, a Mountain View, Calif.-based research firm. While advanced AT&Tmail features such as text-to-voice conversion should help AT&T compete in the EDI market, technology is not enough to assure success, he added.

The translation to X.12 standards will be performed by AT&T using third-party software, the carrier said. So far, AT&T has entered into agreements with EDI software firms Transettlements, Inc. and Supply Tech, Inc., Newell said.

The service can be accessed over either leased lines or a toll-free 800 number, AT&T said. Pricing is unavailable.


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BIT BLAST

# EDI confab seeking papers

**The Data Interchange Standards Association** (DISA), secretariat for ASC X.12, is calling for papers for its second annual conference and technical exhibit, EDI '89, slated for April 11-13, 1989 in New Orleans. The program will focus on electronic data interchange issues, including management and technical topics, and will be divided into three tracks: basic, intermediate and advanced levels. Case studies are particularly welcome. The deadline is Aug. 22. More information is available from Connie Beichner, DISA, Suite 355, 1800 Diagonal Road, Alexandria, Va. 22314.

June saw the completion of the first leg of **Private Transatlantic Telecommunications1**, a fiber-optic cable network scheduled to start supporting trans-Atlantic digital transmissions by July 1989. The cable runs between Sea Girt, N.J., and Brean on the UK's west coast. City gateways are planned for New York and Philadelphia. Private and public inter-exchange carriers and users are said to be negotiating now to lease or purchase bulk digital capacity on the system.

The U.S. market for fiber-optic test instruments will grow from $83 million in 1987 to $98 million in 1990, according to Newport, R.I., research firm **Kessler Marketing Intelligence.** The former Bell operating companies, which were responsible for 50% of 1987 sales, will buy less equipment as their rate of fiber cable installation slows. In contrast, the data communications and military markets will grow 150% by 1990, the firm said.

**The Wollongong Group, Inc.**, a developer of Unix and Transmission Control Protocol/Internet Protocol products located in Palo Alto, Calif., has opened a new end-user training center at its headquarters. Courses will be offered for both users and administrators. Pricing varies depending on the support contract purchased.

# Interlan's OS/2 LAN software lowballs 3Com's

BY PATRICIA KEEFE
CW STAFF

BOXBORO, Mass. — Micom-Interlan, a subsidiary of Micom Systems, Inc., recently announced pricing and delivery dates for its local-area network software said to incorporate Microsoft Corp.'s OS/2 LAN Manager and the Open Systems Interconnect (OSI) network transport protocol.

First unveiled in May, the software is slated for a November delivery.

Most significant to users, according to Bruce MacAloney, Interlan's director of product marketing, is the $2,195 price tag for LAN Manager Unlimited, network software that supports an unlimited number of users. "That's a full $800 below 3Com Corp.'s price for the [comparable] product," he claimed.

Both LAN Manager Unlimited and LAN Manager Limited, which costs $995, reside in the network file server and allow network nodes to share the server's physical resources and services. The Limited version restricts server access to five workstations.

In a separate announcement, the firm's Simi Valley, Calif.-based parent company announced a 32-channel statistical multiplexer for T1/2.048M bit/sec. networks.

The Micombox Type 6 multiplexers feature dual microprocessors and direct memory access. They can multiplex asynchronous and/or synchronous data simultaneously over a single leased line operating at up to 19.2 K bit/sec.

The Type 6 reportedly provides more efficient bandwidth utilization and requires only an RS-232 or V.35 port. Each channel can be individually configured, the vendor claimed. Pricing starts at $4,320 for an eight-channel unit.

# Water data

CONTINUED FROM PAGE 53

will be issued within a year, commands will go from the Sacramento host to some 250 microcomputers that control equipment at each pumping station and power plant. The micros will send temperature, pressure and water flow information to the host via master computers at each plant, which will also act as backup control systems when communications lines to Sacramento fail.

To ensure reliable communications between remote sites and Sacramento, the T1 network will use a mesh design that lets transmissions be routed around failed nodes, Delfin said. DCA's System 9000 T1 Network Management System, based on a Sun Microsystems, Inc. workstation, collects traffic and error statistics and can reconfigure lines as needed.

A major reason for choosing DCA from some 60 contenders for the $3.7 million contract was not only that the Atlanta, Ga.-based company's network management system was available but also that it was tested for several months in actual customer sites, Delfin said.

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Display Adapter. International Business Machines Corporation: Variable frequency monitor required for greater than 640 x 350 resolution. Video Seven reserves the right to change specifications without notice.

## NEW PRODUCTS

### Local-area networking hardware

A fiber-optic Ethernet repeater that can be used to extend an Ethernet cable segment more than 500 m has been announced by **American Network Connections, Inc.**

The **ANC-500F 3-Segment Fiber Optic Ethernet Repeater** allows the connection of any three Ethernet or thinnet 10M bit/sec. carrier sense multiple access/collision detection (CSMA/CD) cable segments.

Packets from either segment are regenerated in the ANC-500F and transmitted over fiber cable to other segments. The vendor said the maximum allowable distance is 2 km. The ANC-500F costs $1,950.

The **ANC-500 4-Segment Ethernet Repeater** reportedly conforms to Ethernet and IEEE 802.3 repeater specifications and 10M bit/sec. Ethernet CSMA/CD operation.

It is interconnected to four Ethernet segments via four transceivers and four AUI cables. Maximum allowable distance between two cable segments is 100 m. The ANC-500 costs $1,450.

Both products are available for immediate delivery.

American Network Connections, 179 E. Tasman Drive, San Jose, Calif. 95134. 408-922-1600.

### Local-area networking software

**Xerox Corp.** has announced an Ethernet-based local-area network software package that reportedly will provide personal computer users with networking capabilities and access to the filing, printing and electronic mail services of the Xerox Network Systems (XNS) communications network.

The package, called **XNS PC Plus**, was designed for use by office and departmental work groups that require communications and resource sharing between PC and workstation users. The product runs on a PC with a minimum of 384K bytes of memory, an Ethernet network access board and a minimum of one floppy disk drive.

XNS PC Plus costs $250.

Xerox, P.O. Box 1600, Stamford, Conn. 06904. 203-329-8700.

### Network management

**Dynatech Communications** has expanded its Dynapac packet switching equipment offerings with the announcement of the **CPX 20.**

The unit is reported to be a high-performance CCITT X.25 packet switch that supports up to 20 trunks at speeds up to 64K bit/sec. per trunk, internally or externally clocked. The product comes with either the V.24 or V.35 interface and includes 3½-in. disks for storing operation software. It is compliant with 1984 X.25 and associated recommendations.

The CPX 20 costs $16,975.

Dynatech Communications, 991 Annapolis Way, Woodbridge, Va. 22191. 800-622-8877.

### Links

**Speech Plus, Inc.** announced a voice-based communications link to IBM System/36 and 38 computers. The **Comm/5251** was developed in conjunction with **Rydex Industries Corp.** as a link for the Rydex Calltext Voice Gateway System (VGS).

Rydex will incorporate the link in a VGS-based voice-response system that will be marketed directly to the System/36 and 38 marketplace. The communications link is said to emulate an IBM 5251 terminal in real time, thereby allowing telephone access to any System/36 or 38 database information by authorized users. The product uses both voice synthesis and stored-voice technologies to deliver the spoken information.

A Rydex VGS-based four-line voice response system, which includes the Comm/5251 communications link with host-access software, is available from Rydex for $58,000. The Speech Plus Comm/5251 communications option for its Calltext VGS is available from Speech Plus and costs $2,250.

Speech Plus, P.O. Box 7461, Mountain View, Calif. 94039. 415-964-7023.

### Electronic mail

A software-based electronic mail system for the IBM Personal Computer, PC XT, AT, Personal System/2 and compatible machines has been introduced by **Coker Electronics.**

Called **Tpost Central**, the product was designed to function as the central post office for a system of remote stations running PC-Tpost 3.0 or any other communications software that supports the Xmodem-CRC file transfer protocol.

Features include a downloadable library directory and a remote polling option. The system requires DOS 2.0 or higher, 512K bytes of random-access memory and a hard disk.

Tpost Central costs $229. PC-Tpost 3.0 for remote sites may be purchased for $129 or $99 each for two or more systems.

Coker Electronics, 1430 Lexington Ave., San Mateo, Calif. 94402. 415-573-5515.


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KMW batch protocol converters allow high-speed (up to 56 Kbps), high-volume batch processing without operator interaction. 3770, HASP, and 2780/3780 emulation allows connection to a variety of printers, plotters, minis, micros, and KMW graphic element processors. Features include auto sign-on, menu-driven setup, on-board diagnostics, and V.35 or RS-232 host interfaces.

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## Twinax protocol converters.

KMW also manufactures protocol converters for use with IBM System 34/36/38 computers. KMW's Twinax converter lets you make the most of your System/3X, by allowing communication with ASCII printers, CRTs, PCs, and Macintoshes.

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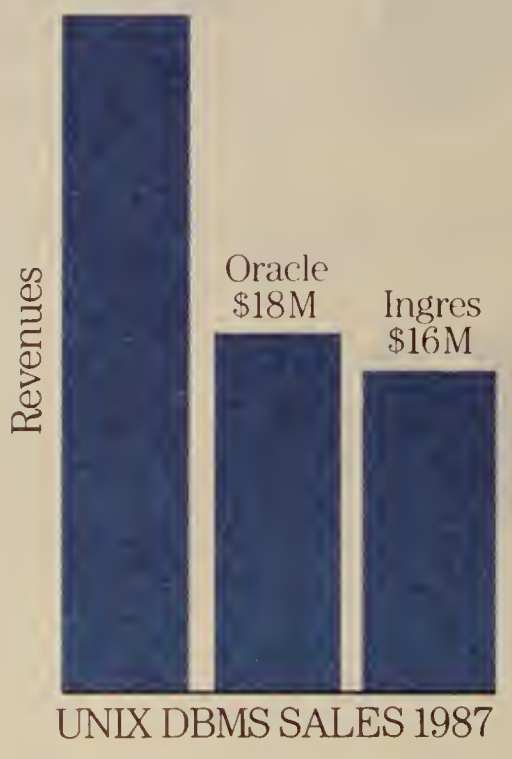

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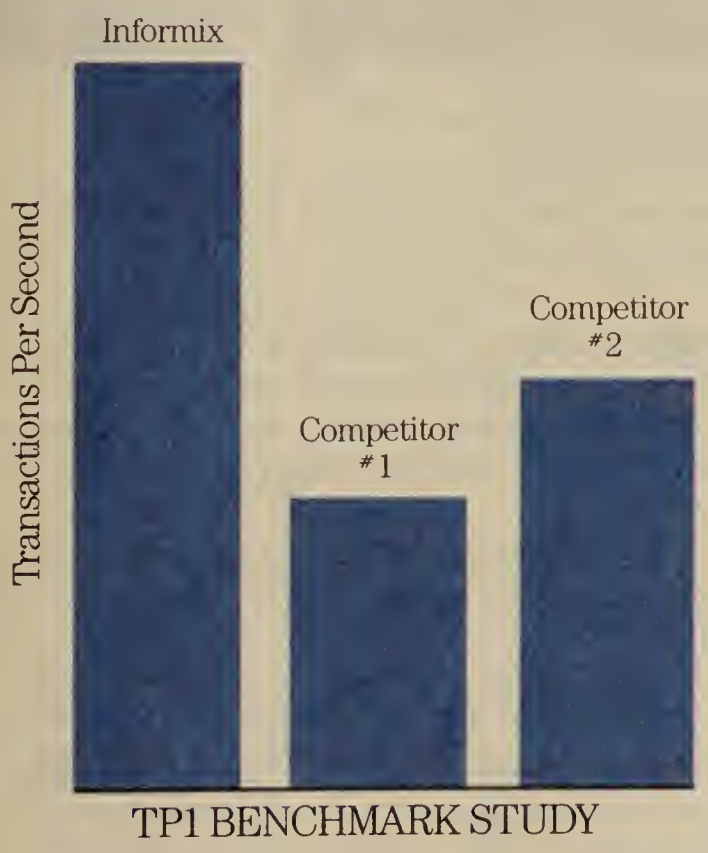


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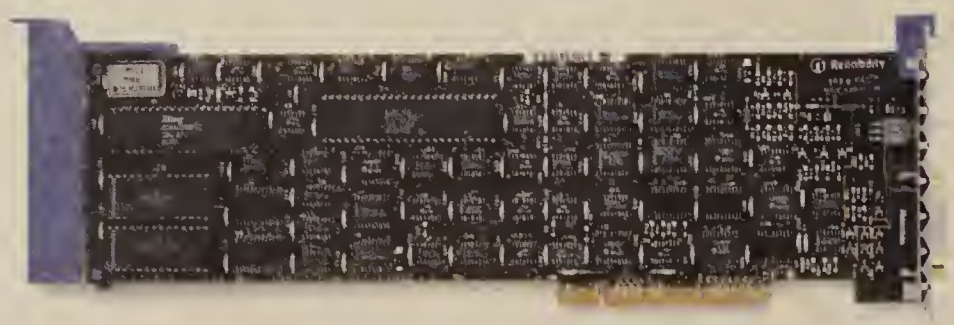

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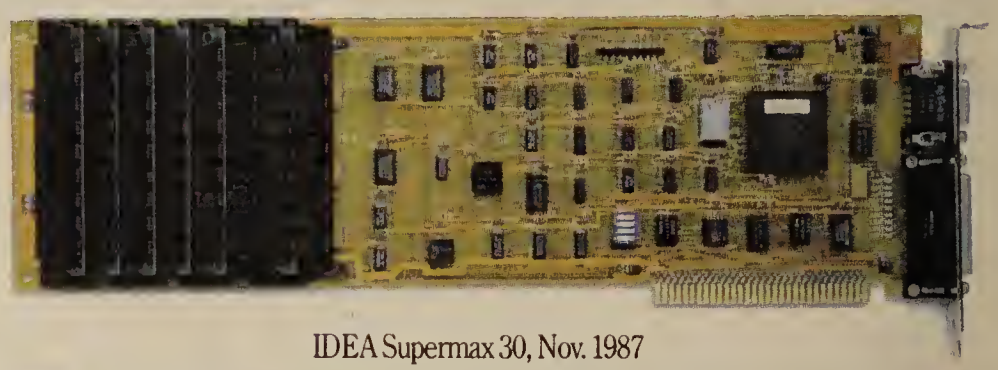

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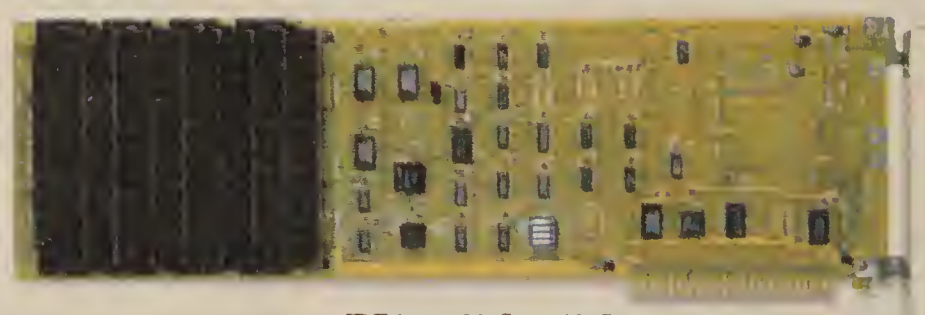

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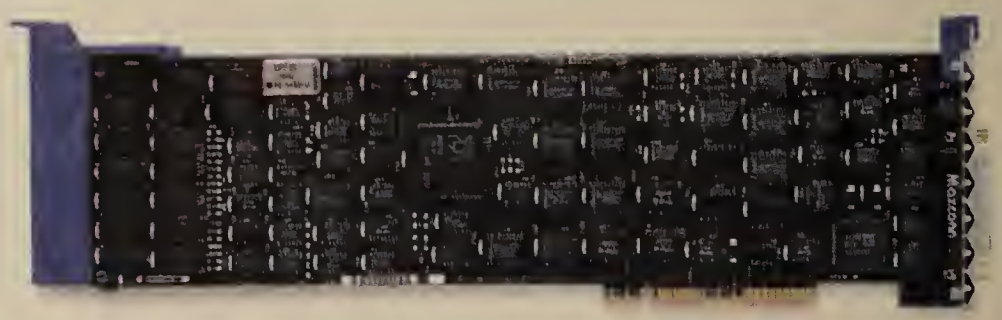

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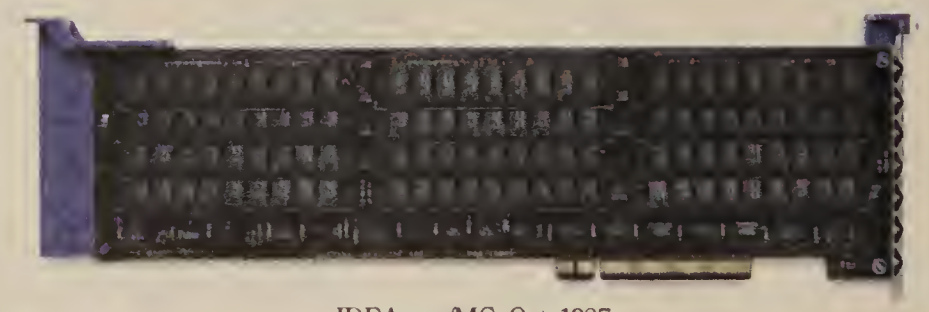

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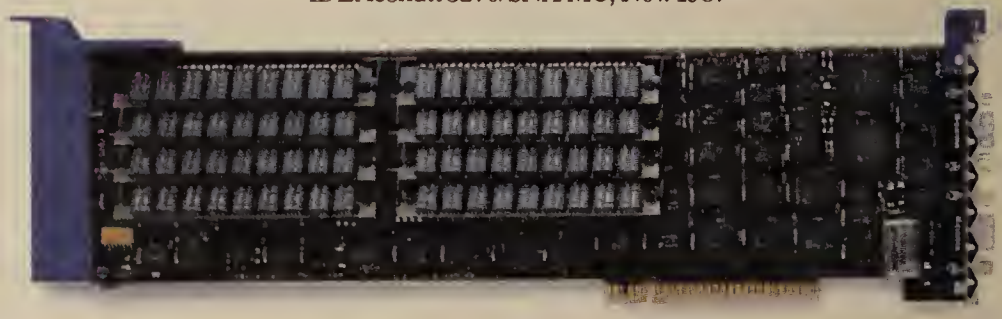
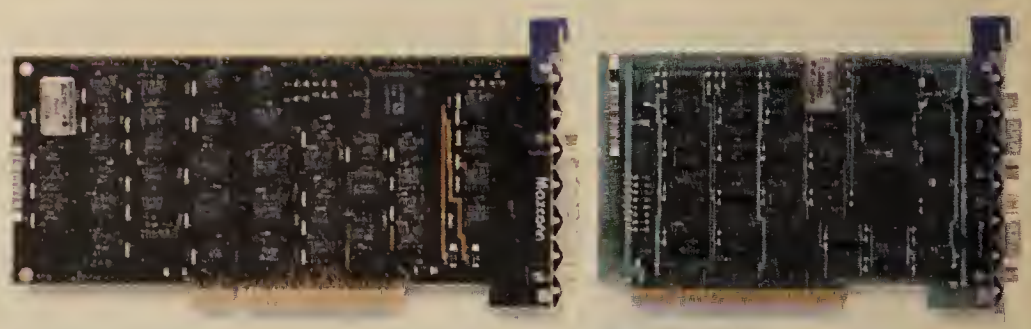


IDEA Supermax/MC, Dec. 1987

IDEAcomm 3278/DFT/MC, Nov. 1987



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# Banks seek higher yield from info systems investment

BY ALAN ALPER

After spending tens of billions of dollars in the last decade on a potpourri of information technology, banks are facing a critical challenge: achieving a reasonable payback after years of negligible returns.

"Banks have spent an enormous amount of money over the years, and they are not sure they are getting their money's worth," says Bill Hewitt, vice-president of First Manhattan Consulting Group, Inc. in New York. A recent study conducted by the firm on the performance of information systems technology in banking found consensus on one disturbing point, Hewitt says: Not one of the banks surveyed said its use of technology had exceeded expectations. One-third said technology met expectations, while two-thirds said they had modest success with it.

Turning this situation around is particularly critical now because the money supply is shrinking and profitability is no longer the easy target it once was. In light of current economic conditions, bankers say they have to work twice as hard — and be twice as smart — to make half as much money. The strategic use of information technology will play a large role in separating the winners from the losers.

Worldwide economic dislocations, including loan defaults by developing countries and plummeting oil prices, have hurt the banking industry's ability to make strategic technology investments. At the same time that investment funds are becoming tighter, competitive pressures are escalating. The monopoly that banks once held on services such as savings and checking accounts has been shattered, setting off a fierce battle with brokerage and insurance companies for the same investment dollar. And even fiercer skirmishes are looming with the incursion of cash-laden Japanese institutions.

Challenged on their traditional preserve, many banks are seizing the opportunities for diversification and expansion offered by deregulation, moving into new areas of financial services and opening branches across state and national boundaries. Large banks, in particular, have been gobbling up smaller institutions in hopes of obtaining greater economies of scale, broader customer penetration and deeper product portfolios.

Sometimes this strategy works. For example, Fleet/Norstar Financial Group, Inc. — created last year from the merger of Fleet Financial Group, Inc. in Providence, R.I., and Norstar Bancorp in Albany, N.Y. — is reducing expenses by consolidating all processing in one center instead of four. A combination of reduced operations staff, reduced network costs and facility efficiencies should help lower the combined banks' data processing budget by more than 20% annually, says Michael Zucchini, executive vice-president and chief information officer at Fleet/Norstar.

Fleet/Norstar was fortunate that the two banks had few incompatible systems, Zucchini says. Not all partners in mergers or acquisitions are as well matched or as ready for such a major integration project. The problem is that much of this activity is reactive, rather than active, and banks are jumping into new arenas and making acquisitions without factoring in the battle readiness of their info systems structures. Years of uncontested operation have, in many instances, produced flabby and redundant systems and that condition is only exacerbated when acquisitions add new layers of unassimilated technology.

To some extent, the difficulty banks have had in making their systems investments work stems from the quandary that almost all pioneers face — the difficulty of conquering new territories while retaining control in occupied areas.

Banks were among the earliest adopters of technology for back-office functions and now that those systems are aging, an inordinate amount of their DP resources — in most cases more than half of budgeted expenses — are consumed by maintenance.

Furthermore, because automation has progressed in increments over a long period of time, banks are now saddled with many separate systems tied to specific product lines.

These systems, which frequently operate on their own independent communications nets, process discrete functions but deliver little in the way of meaningful management information to decision makers or

Alper was previously *Computerworld*'s Mid-Atlantic bureau correspondent.

KEN CONDON

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# Investment

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customer service personnel. Recognizing the need for unified management information but unable to simply scrap these valuable but fragmented systems, many institutions are spending vast amounts of money and energy on jury-rigging the necessary connections.

At some larger banks, the problem is magnified tenfold, says David Gilbert, president of Logica Banking Decision Systems, Inc., a Waltham, Mass., software developer and consultancy. Many banks that have grown through acquisition operate in a decentralized fashion, with four or five separate units collecting data in different forms, he says.

According to First Manhattan's Hewitt, the real key to the turnaround that banks need to achieve lies in a redefinition of the role of information systems management. Managers must, he says, break free of the tactical orientation they have been encouraged to develop and begin to think in strategic terms. Many bank MIS execs were taught to get close to the users, who were in most cases middle- to low-level personnel driven by tactical rather than strategic needs, he says.

The critical missing link, Hewitt says, is a person with a vision for technology, access to top management and the ability to explain how technology can be used to lower operating costs.

Some banks have recognized this need. Elaine Bond, Chase Manhattan Bank NA's senior vice-president of corporate systems, says her bank is one that has made the necessary adjustments. Bond, who functions as the kind of liaison that Hewitt describes, says senior managers at Chase are becoming more comfortable with technology. Many are knowledgeable and approachable on the virtues of information technology. In part, this is because a greater number of technical mangers are progressing through the ranks into line management.

But understanding the virtues of information technology does not, Bond adds, mean buying everything on the market. The trick, she says, is applying a reasonable amount of technology in ways that further corporate goals.

Many other banks are making that same discovery. Overall, banks are expected to invest slightly more on information technology this year than they did in 1987 — more than $10 billion total, analysts estimate. The difference is that they are looking more carefully at where they put their resources.

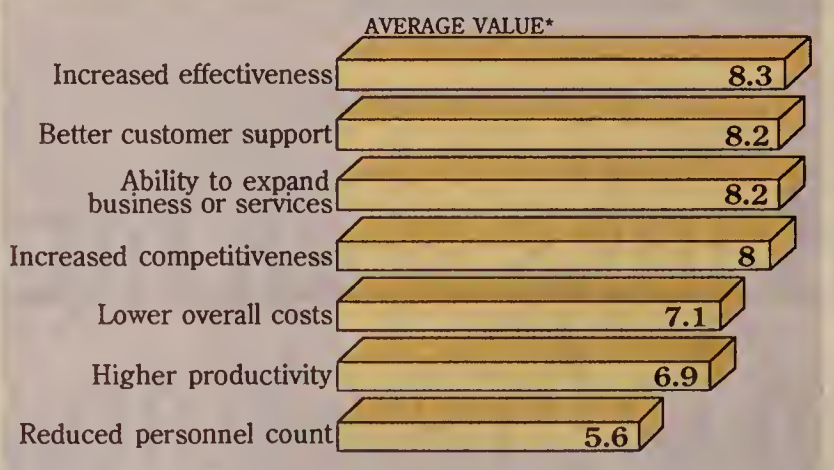
"Banks are still spending a lot of money," says Mark Klein, senior vice-president of John Diebold & Associates, a New York management consultancy. "But what they are spending for is replacing antiquated equipment, looking at what needs to be done to integrate mergers and acquisitions and seeking to provide better information and services to end users and customers."

Banks are also starting to consider more stringent accountability, Hewitt notes. Some are measuring returns on systems investment for individual lines of business and pegging investment increases to profitability.

Where technologies such

**Desired return from automation**

*Bank MIS places a high priority on information systems' contribution to overall business success*




*Ratings by 215 respondents based on a scale from 1 to 10; 1 = not important, 10 = very important

SOURCE: THE SIERRA GROUP, INC.
CW CHART

# Corporate customers seek on-line access

BY STERLING NORTH

If banks want to do business with the nation's top companies today, they must meet the growing corporate demand for automated cash management systems. Medium-size and large companies now use computers to access account balance information, execute fund transfers, issue commercial paper and retrieve financial market data.

As a result of this, banks are rushing to develop more and more sophisticated automated offerings.

"Companies have to have automated banking services in order to be competitive," says Edwin Hagstrom, director of finance at The Stanley Works, a $1.8 billion industrial and consumer products manufacturer in New Britain, Conn. "Electronic access to information is a given, and any bank that doesn't provide it will find itself seriously behind the eight ball."

Typical of such systems is one Citibank NA designed four years ago for New York-based Avon Products, Inc., a $3 billion cosmetic products direct sales firm. Every morning, computers automatically poll each of the firm's eight regional banks for up-to-date information on debits and credits. The system also enables Avon to transfer funds to and from its five regional facilities and their local banks.

But advancements in the industry have come so rapidly that when Avon held a bidding contest among six banks last year, it handed its automated services contract to Bankers Trust Corp. because it discovered that institution could provide the same level of services as Citibank for only 65% of the cost.

"We found there were a lot more players who had the capabilities we require," says Avon treasurer John Donaldson.

### The race is on

Not all the players in this arena are banks. Banks must also compete against vendors of vertical software.

This spring, The Stanley Works purchased a $40,000 automatic account balance and funds transfer system from Wills-Van Den Bergh, Inc., a software vendor in San Bruno, Calif. The workstation automatically interfaces with the reporting services at the half-dozen banks where Stanley concentrates its cash.

According to the company, the bank offerings they evaluated were either too slow, too limited in communicating with banks or too new and untested.

"Frankly, I thought that banks would be more aware of cash movement requirements than anybody else, The Stanley Works' Hagstrom says.

"I was kind of surprised to find out that a nonbank vendor could provide a better product. You would expect the banks to be the most expert at this kind of thing, but it just wasn't the case in our analysis," he adds.

Because there are so many choices and banks are so anxious to compete in this arena, corporate customers are finding that they can expand their services while cutting costs by establishing development agreements with their banks.

Four years ago, for example, Levi Strauss & Co., the $3 billion apparel manufacturer, became the first company in the country to include all of its overseas locations on its computerized banking system through a real-time international network it developed with Citibank.

From its headquarters in San Francisco, Levi executes transactions among its 10 international bank accounts. Citibank spent several hundred million dollars establishing the network, which it now offers to all of its corporate clients. The cost to Levi was only a few thousand dollars.

Another example of a developmental partnership is General Motors Corp.'s collaboration with eight major U.S. banks, which has resulted in a system that electronically transmits payment and remittance information to suppliers. The potential benefits of the system are great for both participating banks, which are actively marketing it to their customers, and for those organizations that choose to use it.

In the 16 GM divisions where the system is currently being used, it has already cut processsing time, eliminated errors and lessened the need for communication between the payer and receiver of funds. It is also expected to dramatically curtail paper costs associated with lockbox arrangements, which now range about $20 billion nationally a year, and take the guesswork out of cash flow assessments. Experts expect that the product will become so popular that a majority of firms will be using it within several years.

"More and more companies are asking to be converted to the system, and we are marketing it to other companies," says Peter Stein, manager of corporate cash management at the National Bank of Detroit, a bank working with GM on the setup.

The major obstacle in developing such a system has been getting all parties to agree on a standardized format by which to transmit financial data electronically. There is currently no single accepted means by which companies and banks can communicate. In addition, companies are skeptical about implementing such a large system and worry about the impact on their business of cutting out the time interval that now exists between the issuance and cashing of checks.

> "I WAS kind of surprised to find out that a nonbank vendor could provide a better product."
>
> EDWIN HAGSTROM
> THE STANLEY WORKS

"If you move away from the check, you are apt to lose the advantage of the several-day float [period] before a check is received and cashed," Avon's Donaldson says. "By transferring funds directly into a vendor's account, they would essentially be asking us for money two days earlier than they normally would have."

GM and the banks maintain that any negative effect can be neutralized by measuring the float in a paper environment and then incorporating the same payment terms into the electronic environment. Rather than an intrinsic flaw, they see the float issue as an educational challenge as banks teach treasury executives to relinquish such alibis as "The check's in the mail."

### Is it safe?

With the proliferation of automated banking services, security has become an overriding concern for both banks and corporate customers.

At Insilco Corp., a $750 million diversified manufacturer in Meriden, Conn., automated banking systems provided by Morgan Guaranty Trust Co. include elaborate fail-safe procedures to help guard against transfer fraud. Users must input three different passwords to sign on to the system and then must receive supervisory verification for all transfers exceeding a certain amount. For additional protection, the system requires one person to enter the transfer information and another to release it.

"On balance, banks are becoming a lot more sensitive to that kind of activity," says Malcolm Todt, Insilco treasurer and vice-president. "They have to."

Nevertheless, extremely critical cash transfers are likely to be preceded by a good old-fashioned telephone call. When push comes to shove, Todt personally calls the Morgan Guaranty senior vice-president and tells him what he wants done.

"When it comes down to the bottom line, we rely on the old manual banker routine," Todt says. "It is sort of an ironic twist to having everything computerized in banking." •

North is a free-lance writer based in Cambridge, Mass.

as expert systems show up as a major line item on budgets, they are now more likely to be tied to a careful analysis of profitability potential.

Even large institutions with reputations for technological exploration, such as Bankamerica Corp., are now taking a more cautious stance. "We used to explore technologies that evolved into concepts and left it at that. Now we only work on things that translate into improved products and services," says Bruce Fadem, senior vice-president of Bankamerica's MIS unit, Bank of America Systems Engineering.

The bank is still smarting from heavy losses incurred in Masternet, an all-encompassing trust accounting system that received much publicity in October 1987 when it was scrapped after a five-year development effort. Fadem declines to go into specifics regarding the reasons for the termination of that project, pointing instead to other projects developed during the last five years — systems handling branch automation, wholesale banking and loans — that were successful.

**Fleet's Zucchini**

A particularly promising investment, Fadem says, is a newly completed retail Customer Information File (CIF) system. Bankamerica's CIF consists of multiple databases that provide transparent access to customer account data. It was built in a modular fashion to allow the integration of new products with minimal reworking, Fadem adds. One such product, Alpha, combines basic banking services in one account for one monthly service charge.

**Chase's Bond**

Accessing data that for years has resided in discrete product systems with different delivery mechanisms was a monumental task, Fadem says. It was, however, necessary since it permits the cross-selling of products and services.

Although not a new concept, CIFs — which use relational database technology to give customer service and marketing representatives a unified view of customer relationships — are rising on the priority lists at many banks. They provide a vehicle for selling customers additional products and facilitate better customer service, bankers say.

Royal Bank of Canada in Montreal has spent the last decade enhancing its in-house-developed CIF to the point where it is now used for direct marketing of services and products, according to Frank LaBlans, vice-president of retail security services. One payback, he says, is that response rates on its direct mail marketing range from 6% to 25% compared with the 2% to 4% industry average. "We're successful because we choose clients that we know are in the market for certain services and products," he explains.

The CIF is so successful that an abbreviated version is used by customer service and marketing reps to do financial planning and account reviews with customers. LaBlans says the bank also saves data entry costs when it comes to address changes since all client account information is linked, and it has increased its deposits at a time when most banks are losing that type of business.

Chase Manhattan, another CIF user, is using IBM's DB2 relational DBMS to provide easy access to some 1.3 million customer accounts at its 200 branches by tellers, branch managers, product marketers and customer service personnel. Chase's CIF combines data from six separate systems, which handle processing, time deposits, loans and bank teller transactions, within a central repository. "We wanted to position our people to deal with customers on a relationship basis rather than on a product basis," says Gary Neville, vice-president of Chase's branch systems.

Chase is also pursuing consolidation in another context, looking to bolster its global communications capabilities by interconnecting a variety of information networks. The bank aims to create a single information highway, enabling all employees and certain customers — regardless of device location — to send and receive data and electronic mail. "It should operate like a utility, offering classes of services to specific users," Chase's Bond says.

The bank intends to start by testing a global E-mail application that will link Digital Equipment Corp., IBM and Wang Laboratories, Inc. systems running on a variety of networks next year. Later, the bank plans to add other applications, including provision of customer access to account information from points outside the bank's network. "We intend to make it as comprehensive as possible," Bond declares. "Whether we get there or not, only time will tell."

Although Chase's network-building project is unique in its scale, construction of unified data networks is a priority for many banks. For years, banks constructed stand-alone networks for each new product or service they offered, but now they are realizing that such splintering of communications is counterproductive.

A few years ago, NCNB National Bank of North Carolina, a Charlotte-based regional with some $29 billion in assets, realized that application-specific networks

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were just not cost-effective. Two nets — one handling automated teller machine transactions (ATM) and the other providing branch automation services — had sprung up five years apart during the 1970s and ran parallel to each other at the bank's 600 branches.

NCNB recently completed a three-month pilot test at its Tampa, Fla., data center transmitting both branch automation and ATM data to two branches over its private network. The experiment worked so well that the bank intends to consolidate all traffic on one line by early next year. "We feel we can save $800,000 a year doing this," says Joe Whiteaker, NCNB's vice-president of telecommunications planning.

After years of stagnant growth, ATM purchases are expected to steadily increase during the next two years, with the growth fueled by savings and loan associations and credit unions, according to a recent study by Frost & Sullivan, Inc.

Initially touted as a cost-saving mechanism for banks, ATM technology is now equally likely to be viewed as a cost of doing business in a competitive environment. Chase Manhattan's Bond says she believes ATMs have added to some banks' operating costs. It's a convenience, she says, that "someone has to pay for."

Citibank NA, which blanketed New York with ATMs in an attempt to lower the costs of branch operations, recently moved to levy fees on ATM use for customers who do not maintain certain minimum balances. Some say this action indicates ATM volume was insufficient to cover costs. Others say it represents an opportunity for Citibank to increase revenue at the expense of "second-class customers." Whichever is true, there is little doubt that the next wave of ATM adopters — small savings and loans and credit unions — will be less able than Citibank to either neutralize costs or generate revenue through ATM fees.

John Russell, vice-president and director of corporate marketing at Banc One Corp., the first bank holding company to embrace ATMs in the early 1970s, says he believes ATM fees will become common at large banks on both coasts where transaction volume is heavy, "but not in a majority of the country."

In the absence of that option, many smaller ATM adopters will have to look for other ways to minimize the bottom-line effect of any unreclaimable expenditures on this technology. Some savings and loans are joining ATM networks to keep processing costs down.

Another possibility may be to wring more profitability out of back-office operations. Many banks are investing large sums of money to ensure standard back-office processing methods and reduce costs. Use of document and image processors is helping to pare costs and provide a unified approach to back-office operations. Imaging systems are being cautiously deployed as a way of truncating paper processing, bankers and analysts say.

At Bankers Trust Corp. in New York, standardization means modification of hardware, software and networking standards. "An architecture has been defined so that the bank does not end up with 37 different types of hardware," says Ira Feinberg, senior vice-president of global operations.

"In the days when banks were highly profitable, there was less pressure on them to do things like this, but times have changed," says David Clark, an analyst at DMR Group, Inc. in Montreal. Banks can no longer afford to settle for anything less than their full money's worth from information technology. •

**CHASE AIMS to create a single information highway enabling employees and certain customers — regardless of device location — to send and receive data and electronic mail.**

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# Keep branch systems simple

BY ERIC WILLNER

As the world becomes more interconnected and companies forge alliances and conduct trade across borders, global presence is becoming a critical business advantage for more and more banks.

The most effective way for banks to provide international service is to establish local presence in other markets through the creation or acquisition of branch bank offices.

There are risks associated with such expansion — operating in overseas markets introduces all kinds of technological, operational and regulatory complexities. Often, however, both the risk and the complexity are exaggerated beyond what is necessary because the role of foreign branches is misunderstood.

Branches in other countries serve several important purposes, including the following:

- To provide a local presence required by customers concerned about personal service, government authorities interested in accountability and central bank managers who want on-site expertise about the market.
- To develop local business by originating local transactions for the parent bank and delivering either standard or customized products.
- To address any legal requirements such as obtaining licenses, making deposits in central banks and reporting their financial position and compliance with government programs on a timely basis.

None of these key functions, it should be noted, require a significant information systems investment. Technology can be, and often is, a factor for competitive advantage, but it should also be recognized that the advantage could be outweighed by the expense and difficulty of long-distance support for sophisticated systems.

A branch operation in a foreign market should maintain a very simple operating environment requiring minimum on-site technology support. Even a data center equipped with a minicomputer is usually overkill.

Using microcomputers with either downsized internal programs or commercial software often produces better results than using more expensive minicomputer-based systems. Microcomputers meet 90% of a branch's needs, cost little to support and can be obtained easily from local suppliers.

Citibank, for example, found that by replacing a branch data center with front-end microcomputers, it was able to save $300,000 annually and upgrade the quality of its products and services.

An MIS manager assigned to set up a branch should plan on starting with microcomputer versions — either downsized or new — of bank products that have proved successful elsewhere and then look for local needs that can also be served with minimal MIS expense.

> IT IS particularly important to pare down equipment and reduce support requirements because many governments are reluctant to issue work visas for foreign bank employees.

For example, a branch may begin by offering payment services utilizing its own microcomputer-based capabilities in combination with some network, possibly its own or one such as the Society for Worldwide Interbank Financial Transactions, also called Swift, or the Federal Reserve System's Fedwire. Then, this may be supplemented with some specific products or services to meet specific local requirements.

It is particularly important to pare down equipment and reduce support requirements because many governments are reluctant to issue work visas for foreign bank employees, and an equal number impose limits on importation of computer and telecommunications hardware and software.

Importing an integrated banking system is unwise, not only because of the expense or bother of dealing with import restrictions but also because of frequent changes in local economic conditions, reporting requirements and regulations.

Citibank discovered, for example, after implementing its Cosmos integrated banking system on IBM mainframes at branches throughout South America and Europe, that because of the frequency of such local changes, it was necessary to maintain large staffs of systems analysts at each of the branches. What resulted from all of the alterations was a very expensive set of nonstandard systems.

A much more sensible alternative — and one that Citibank has since adopted — is to handle the delivery of customer services and both standard and tailored products with configurations of microcomputers supported by telecommunications.

There are a substantial number of good commercial packages on the market to support front-office functions. Furthermore, in many instances it is also possible to use generic products such as spreadsheets and word processors for tasks like calculation of loan schedules and preparation of letters of credit.

For back-end functions, there are several options. Probably the best choice is to link up with an existing back-end processing system at either the home office or a regional office. Records can be updated daily and a copy downloaded to the remote branch during local off-hours.

To get an idea of how this works, take the example of a loan and deposit operation as it is handled for more than 20 Citibank branches in South America and the Caribbean. Preparation of contracts and schedules is done in each branch. The record-keeping and accounting for all branches are handled at a central or regional site. Copies of the records for each branch are transmitted back to them daily.

Legal and management reporting costs less and is of better quality when produced by a back-end CPU. The controls are simpler and more secure because the database is on one central computer. It is a myth that legal records must be entirely produced by a computer system at the branch bank. Local authorities are usually satisfied with printouts of the general ledger, trial balance and regulatory reports.

### Telecom's the ticket

Telecommunications is really the franchise license for a branch bank. With a working telecommunications hookup and a license to operate, you are in business. But the connection doesn't necessarily have to be a sophisticated network link, which can cost in the neighborhood of $15,000 per month if a bank wants to span a distance from Venezuela to New York, for instance.

A telex link, for example, will allow a bank branch to accomplish many of the same business objectives as a leased line at a fraction of the cost.

The wisdom of simplicity in terms of telecommunications has been confirmed for Citibank in terms of the low acceptance and, therefore, low payback achieved by its Worldwide Intelligent Network, first implemented in 1981. This year, the bank's original, asynchronous network, set up in 1974, still carries 90% of all data traffic for global branches, while its intelligent packet-switching network languishes.

The goal of the information systems manager assigned to automate a foreign branch should not be to create a sophisticated information systems infrastructure but to devise the least costly and easiest to maintain system that will satisfy the needs of the market. •

Willner, managing director of Infostrategies in New York, spent 16 years at Citicorp, where he served as president of Citicorp Latino, Inc. and implemented numerous international branches.

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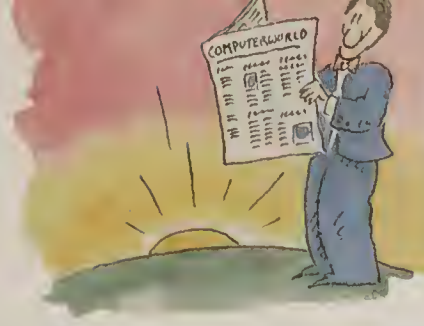


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# Two-for-one sale

*Minisupercomputer vendors vie for too few customers by making deep price cuts*

BY ALAN RADDING

Let's say you are wrestling with numerically intensive problems — maybe you're trying to simulate the forces acting on the earth's core or build some exotic model of fluid dynamics. What would you do?

If this were back in the old days — say, before 1985 — you might spend a couple of million dollars on a Cray Research, Inc. supercomputer to solve your problem. If you didn't happen to have that kind of money in your budget, you might simply let the job run on your Digital Equipment Corp. VAX along with your regular work. In a month or so, your job would finish running.

Or, if you were fond of complicated programming, you could hang a vector processor on your IBM mainframe and run your application there.

Today, more users are opting for a different solution — a minisupercomputer. Once referred to as baby Crays, minisupercomputers are high-performance machines that run in excess of 10 million floating-point operations per second (MFLOPS) and embody unconventional architectures. The core of the minisuper's appeal to many customers is price: They generally cost between $100,000 and $500,000.

To date, minisupercomputer users remain overwhelmingly scientific- and research-oriented. Still, some corporate computer users are beginning to take an interest.

Buyers venturing into minisupercomputer territory find themselves without the conventional landmarks. Major companies, particularly DEC and IBM, are not yet involved in the market, although analysts predict that both are contemplating entries within the next few years (see story page 72).

Instead, the buyer finds the market populated by relatively small, little-known firms battling for dominance or just struggling to establish themselves in this emerging market segment. Convex Computer Corp. and Alliant Computer Systems Corp. are the best known. Other minisupercomputer makers include such companies as Cydrome, Inc., Elxsi Corp., Encore Computer Corp., Floating Point Systems, Inc., Multiflow Computer, Inc. and Scientific Computer Systems Corp.

For the first-time buyer, choosing among the vendors can be difficult without conventional guideposts. There are few appropriate standards, and few vendors have a large enough user base or long enough track record to serve as reliable guides. Still, in many ways, minisupercomputer buyers wrestle with the same issues as conventional computer users.

"Their main concerns are performance and ease of use," says Omri Serlin, publisher of the "Serlin Report on Parallel Processing" in Los Altos, Calif. Each user's definition of acceptable performance and ease of use, however, is highly individual.

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### Something for everyone

Each minicomputer vendor has staked out its turf according to its architecture (see story page 74). Alliant offers parallel processing. Convex machines are built around a uniprocessor. Multiflow offers a very long instruction word. Encore is massively parallel.

"Each architecture has its strong and weak points," says Marcia Brooks, senior analyst at market research firm International Data Corp. in Framingham, Mass. To determine which architecture is best, "the user needs to know the idiosyncrasies of his own application," she says.

From a user's standpoint, the specific architecture of the machine, with the exception of an extremely radical architecture, is less important than the operational and performance features that result for his particular application. "I doubt buyers are concerned about the details of the architecture, except those who have some special interest," Serlin says.

For example, the Earth, Atmospheric and Planetary Sciences Department at MIT considered the problem of architecture when it was purchasing its two Alliant minisupercomputers.

The problems professors run on the machines are a highly numerical mix of vector and scalar operations. "If somebody made a scalar machine as fast as a parallel machine, it would have been better, but there wasn't one available at our price," says

---

Radding is a Boston-based author specializing in business and technology.

- **Choose your architecture**
- **Unix's popularity makes and breaks sales**
- **No brand loyalty — yet**

David Krowitz, the department's systems manager and research specialist.

The department staff looked at the small field of vendors. Ultimately, it decided it could best handle all the different problems with a parallel architecture and focused on Alliant and Convex as the only appropriate choices.

### How to choose?

The Analytic Sciences Corp. (TASC), a Cambridge, Mass.-based technical research and development firm, quickly determined that it needed parallel processing in its minisupercomputer, but the company still had to decide which implementation would work best.

Both Convex and Alliant provide parallel processing, but the latter uses a multiprocessor architecture, the former a uniprocessor. The decision was made to go with an Alliant machine, in part because TASC was impressed with the greater possibilities inherent in Alliant's multiprocessor parallelism.

Georgia Institute of Technology's School of Engineering in Atlanta selected Multiflow's Trace minisupercomputer over Alliant's, in part because Multiflow's long-word architecture better handled its scalar applications, says David Schwartz, an assistant professor. While the school runs a variety of applications, Schwartz saw that more of its work is scalar than vector.

A radical parallel architecture led New Mexico State University's Computer Center to acquire a Floating Point machine. "We bring in high-risk architectures," says Joseph Denk, director of the center. The machine is used primarily for a U.S. Army contract involving research in parallel architecture that requires a high MFLOPS rate. Floating Point's system best fit those criteria.

More important than the actual architecture, in most cases, is operational performance. For the minisupercomputer market, a number of standard benchmark tests are emerging to measure the performance of one machine against another. Linpack, Whetstone and Livermore Loops are the most common benchmarks. Livermore Loops provides a snapshot of a machine's speed at floating-point operations. The Whetstone benchmark uses a broader set of programs that are more helpful in situations in which users are not running a lot of floating-point operations, explains Robert Trier, director of research at the Research Consortium in Minneapolis. The trend is toward Whetstone, he adds, because it gives the customer a better idea of how the machine performs a variety of operations.

Since each user's application is so specific to the individual application, however, standardized benchmarks and published ratings such as MIPS and MFLOPS are of limited value.

"The tests are rubber rulers at best, but they are the only thing we have," says Richard Schaffer, a principal at Technologic Partners, a New York-based firm that follows emerging computer companies.

IDC's Brooks notes that new de facto benchmarks are emerging, based directly on the applications minisupercomputer users are likely to run. "What is beginning to happen is that [producers of] leading software packages are publishing their own benchmarks," Brooks says.

### Radio standard

One software package growing in popularity among a specialized segment of minisupercomputer users is the Astronomical Image Processing System (AIPS), developed by the National Radio Astronomy Observatory (NRAO) in Charlottesville, Va. The program, consisting of approximately 700,000 lines of code, has become a standard for radio image processing.

As a result, the AIPS program has also become a minisupercomputer benchmark among astrophysicists and is even specified as a benchmark in government requests for proposals, says Robert Burns, who heads the observatory's computer division. The NRAO runs the program on a Convex machine, which it purchased in 1985.

Published general benchmarks were used by the NRAO "only to determine who was in the ballpark," Burns says. The NRAO ran the Livermore Loops tests on Alliant and Convex systems, but the observatory was not prepared to judge between the two based on those results alone.

Convex ran the AIPS test a little faster, but not dramatically so, Burns recalls. The final decision to go with Convex was made on a range of factors, including price as well as performance.

"It is very hard to compare the machines without using them for a few months running under a real load," Georgia Tech's Schwartz says. In the end, "a benchmark only tells you how fast your benchmark runs. A better benchmark is your own applications," he concludes.

### The power of Unix

To many buyers of minisupercomputers, ease of use means ease of programming in the Unix environment. "Unix is becoming the de facto standard in the technical world," IDC's Brooks says, noting only a few exceptions.

"There isn't anything inherent in Unix to make it so appealing to minisupercomputer users," Serlin says, adding that Unix must be heavily modified for multiprocessors. "In fact, it doesn't offer any great incentive except that it has wide acceptance in the science and technical world and it is very cheap."

Sachs/Freeman Associates, Inc., based in Landover, Md., went with Multiflow's Trace in large part because of the ease and speed of the Unix operating system. The Trace machine runs the University of California at Berkeley's Unix 4.3 and Multiflow's own compiler, a combination that Sachs/Freeman found very attractive.

Sachs/Freeman, a basic physics research firm that uses computers for tasks such as condensed particle physics simulation, writes its own applications in Fortran, as do many minisupercomputer users. "With the [Multiflow] compiler, we could use our program as is," says Ernest Freeman, Sachs/Freeman's president. "We ran them as a benchmark and they ran the first time."

Price considerations play a major part in minisupercomputer buying decisions, once it has been determined which machines will perform the user's applications well.

The market is particularly price-sensitive because many minisuper buyers are research organizations financed to a large degree by government grants, Serlin says. As the government cuts outlays in an attempt to balance the budget, funds for minisupercomputers are harder to come by.

The extreme competitiveness of the market segment, with too many vendors competing for too few buyers, results in a price war. "The competition is fierce," Brooks says. "You're seeing almost what amounts to a two-for-one sale."

While the competition creates a buyer's market, there is a downside to what is normally a very pleasant situation for users. "If users force prices to the absolute rock bottom, it will be hard to keep vendors for the long term," Brooks says. Customers seeking the best possible price may actually dampen the long-term viability of their vendor.

Muzak Ltd. Partnership in Seattle, a for-profit commercial operation, may have more latitude in spending, and Robert McGrath, the company's director of information systems, says he was concerned about reaching a healthy balance. "They were willing to negotiate the price; but on the other hand, I wasn't eager to have a company give away a machine to its detriment. I would be afraid of a company willing to price itself out of

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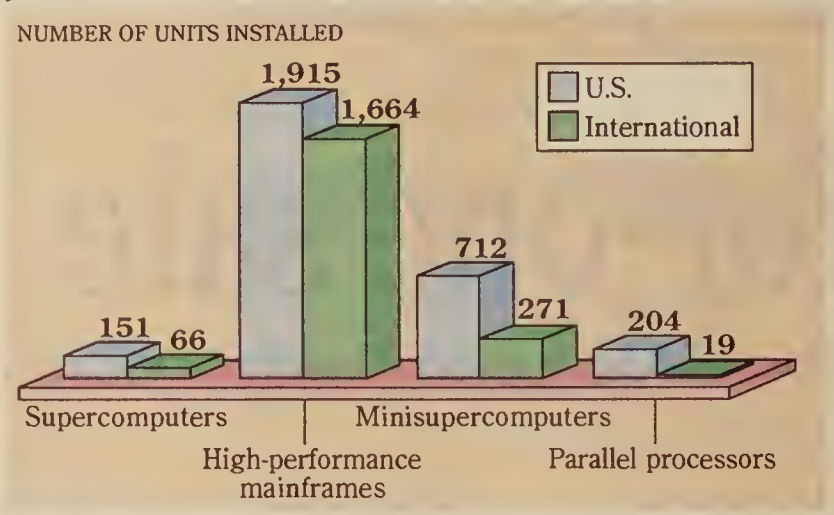


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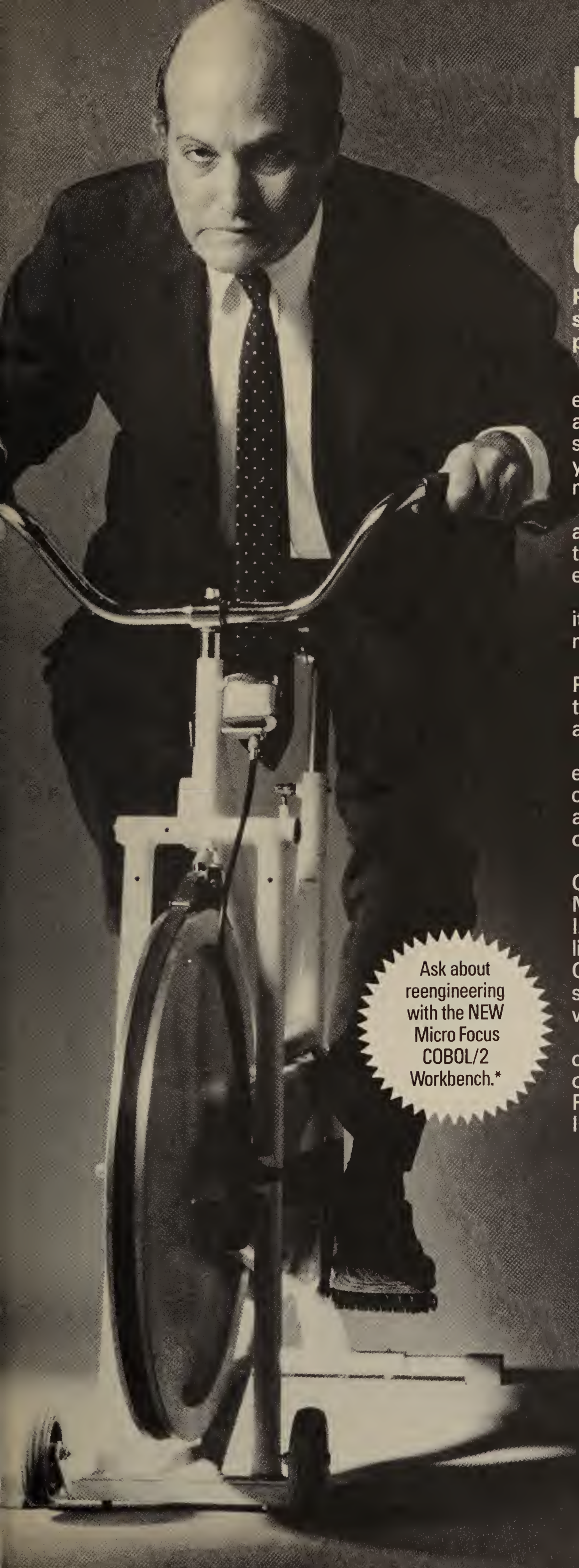
## Big guys don't jump in

Neither IBM nor DEC currently offers its customers a minisupercomputer product. IBM strongly emphasizes its Vector Facility for the 3090 to those customers who claim to need the extra computational power. But IBM does not offer a minisupercomputer box as such, nor does the Vector Facility compete in price with one from the likes of Alliant or Convex.

DEC is rumored to be working on a vector facility for VAX systems to be offered possibly as soon as the first quarter of 1989. DEC's other activities in this area include recent discussions with Mips Computer Systems, Inc. in Sunnyvale, Calif., possibly to take advantage of Mips' chip set for high-performance applications. But again, DEC's activities are not likely to result in a box that is able to compete head-to-head with the crowd of minisupercomputers that are available today.

The market "is crowded with the start-up companies, none of whom is seeing the kinds of profits that make companies like IBM and DEC want to jump in," says Marcia Brooks, senior analyst at International Data Corp. in Framingham, Mass.

Brooks says this level of competition between smaller companies buys time, in effect, for IBM and DEC. "They are watching the situation very carefully," Brooks says.



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existence," he says.

MIT's Krowitz says his department paid full list price — about $130,000 — for its first minisupercomputer. Alliant later dropped its price and refunded the difference to MIT, which in turn plowed the money back into a larger disk drive.

The next time Krowitz went into the market, he entered into serious negotiation with Alliant and Convex. "Convex wanted to win us away from Alliant," he recalls, and dropped its original price by $200,000. Alliant responded by cutting its price as well.

TASC also discovered that the minisupercomputer vendors were very flexible with their prices, but Thomas Stephenson, manager of TASC's Advanced Computing Technology Department, says he finds the discounts to be generally in line with what he sees in the rest of the computer industry.

Price was a very important factor at Georgia Tech. "We had a fixed budget," Schwartz says. Given that universities traditionally get good prices from computer vendors, Schwartz found that all the minisupercomputer vendors were willing to be very flexible in pricing. "Start-up companies like to put machines in highly visible places," he adds.

### Environmental concerns

Buyers exhibit less concern about environmental factors — such as a machine's size, power consumption or cooling requirements — than the vendor literature makes out. Networking and communications are also secondary issues. "We use an Ethernet with limited systems, and we've had no problems," Schwartz says.

MIT's Krowitz had the same experience. "We run standard networking. Everything talks with the Alliant."

I/O bottlenecks, which were a major headache when users tried to run their applications on conventional machines using a vector processor, have generally been corrected with minisupercomputers. "The vector [processor] is integrated, so you don't have the shuffling from disk to host to array processor as before," NRAO's Burns says.

A primary issue for users is the operating systems supported by their prospective minisupercomputer. The operating system was the key element in Muzak's decision to go with an Encore computer. Muzak is a dedicated Pick shop that moved to a minisupercomputer when it hit the limit of what it could do on its IBM Series/1 running the Pick operating system.

Parallel processing appeared to offer Muzak far better performance for the money, but the company refused to abandon Pick. "The standard Pick machines were too narrow. With the minisuper, we had new possibilities — Pick plus Unix, which was a real high priority," McGrath says. That was what Encore offered.

What may become as important as running Unix or having good Fortran and C compilers is the number of applications that already run on a particular machine. "Convex has the largest number of application packages, which gives it a clear advantage," publisher Serlin says. While many users continue to write their own applications today, the pattern is changing. "There are a whole range of numerical-intensive applications that are standardized. Simulations are very similar, whether it is for an airplane or a bridge," he adds.

Because minisupercomputers are

# Choose your processing weapon

To step into the world of minisupercomputers is to enter a maze of puzzling architectures and processing arrangements. Each architecture represents the designer's idea of how best to make a computer perform numerically intensive processing in the least time possible.

First, the manufacturers divide the world of numerically intensive problems into two basic categories: vector and scalar. Vector refers to data set up in long lists of repetitive tasks, explains Robert Trier, director of research at the Research Consortium in Minneapolis. Speed is achieved by having the computer do the same thing over and over again.

Scalar designates those numerically intensive situations that cannot be arranged in a repetitive sequence as a vector. A uniprocessor architecture, such as Convex's, sets up a vector scheme that flows quickly through a proprietary CPU.

Multiprocessor parallel architecture, used by Alliant and Encore, breaks the problem down into little pieces for very fast processing by up to 16 processors simultaneously. Massively parallel processing employs more than 16 processors.

The very long instruction word used by Multiflow speeds up processing by looking ahead to instructions coming up as it schedules the computer's resources.

ALAN RADDING

made by young companies without proven staying power, and the field itself is rapidly evolving, buyers must concern themselves with the issue of long-term support from the product vendors on top of product performance and price.

"There is no question when dealing with young companies — those under 5 years old — that there is some risk," IDC's Brooks says. The buyers are well aware of the risk but have no alternative, she points out. DEC and IBM do not yet have comparable products, and these users would be held back in their work if they did not have a minisupercomputer now.

The widespread acceptance of Unix theoretically removes some of the risk, Brooks adds. "If everybody is running Unix, they can, in theory, port to another platform" if support dries up, she says. Users also appear willing to take their chances on a young, unproven vendor if its product contains widely available components and uses a standard operating system.

### How do you grow?

Besides a vendor's staying power, users also consider the upgrade path within a vendor's product line. In a young field, characterized by vendors' first products, the upgrade paths still aren't clear. Among the current vendors, Convex and Alliant are the oldest and most established, Serlin says. Of those two, Alliant offers a wide product range that allows the buyer to enter the market at the low end and easily upgrade by adding additional processors.

Muzak's McGrath was concerned about Encore's widely publicized string of financial losses and high management turnover. "I talked to the senior-level people at Encore, and I was impressed," he says. In the end, McGrath assured himself that the company was on the right track. Furthermore, he could take comfort knowing that Encore's product was based on widely used components, and he could continue in the Pick environment. If Encore disappeared, Muzak wouldn't be suddenly left at a dead end.

TASC's Stephenson also considered Alliant's future prospects before buying the machine. He preferred a more conventional solution within DEC, "but they had nothing on the boards," he says.

Acknowledging that start-up operations are risky, Stephenson concluded, "I'm confident that the company will be around for five years anyway." Even if it isn't, Stephenson is sure that because Alliant's quality control is good and there is nothing truly exotic in the machine, he is not going to be stuck with an unsupportable lemon.

"When you are sinking $300,000 or $400,000 into a machine, you want to make sure it is [made by] a viable company. You want the company to be around for three or four years and then be able to [help you] upgrade," MIT's Krowitz says. His department purchased its first Alliant system, an FX-1, in September 1985. In April, the department purchased an Alliant FX-40. The department is using three of the FX-40's maximum four CPUs, so Krowitz says he has room for growth.

But strong brand loyalties have yet to develop. Because the field is changing so quickly, organizations that return to the market typically review all the options again. "When we go back to the market, we look for the best technology. We've had a positive experience with Alliant, but we're not locked into them," Stephenson says. Before Krowitz's department purchased its second Alliant machine, it too went back to the market and seriously considered Convex, among others.

Georgia Tech's Schwartz went with Multiflow the first time around because it offered a full product line that would accommodate expansion. Although the university hasn't upgraded yet, Schwartz says it will not automatically go with Multiflow when the time comes. "The technology is changing very fast. We'll be looking to upgrade in about a year, and we'll look beyond Trace," he says.

### Common goals

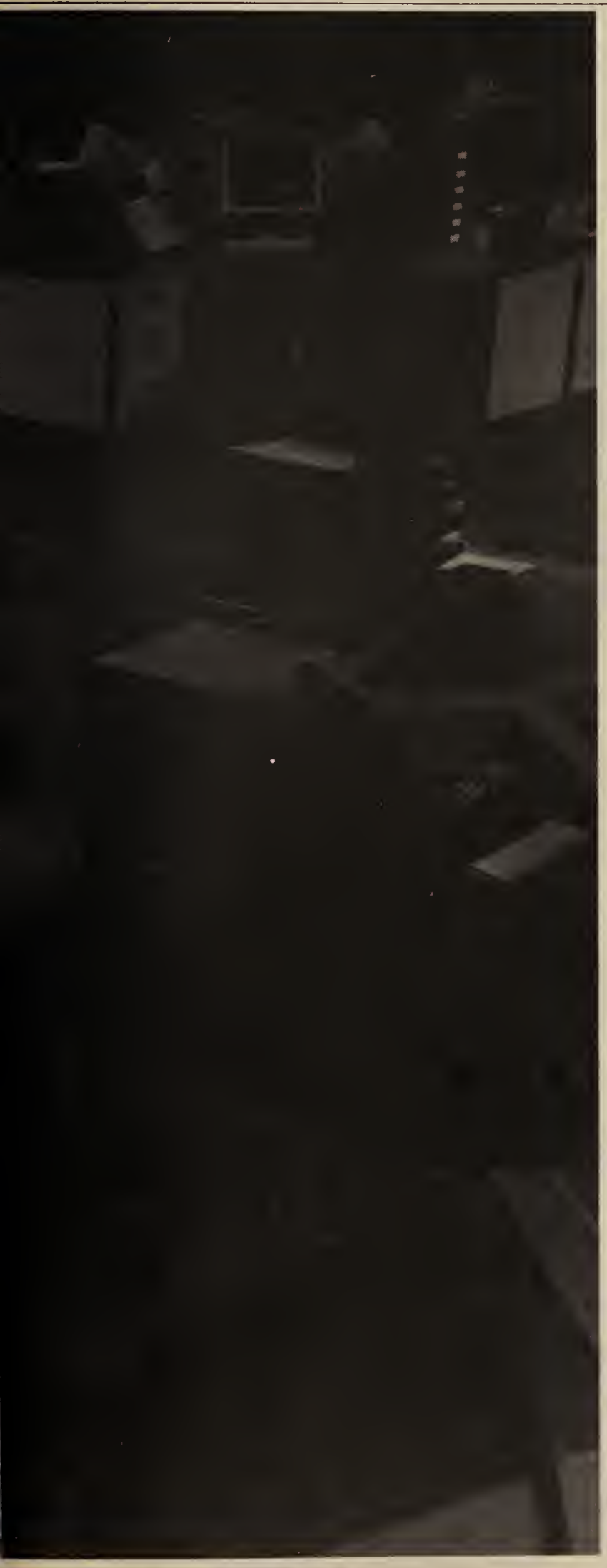
Minisupercomputer buyers may be mostly engineers who can write their own code, but when it comes to buying a minisupercomputer, they are little different from the business executive who wants a personal computer for budgeting or planning. Each may define performance and ease of use in different terms, but both want to do their jobs without having to fuss with the machine.

If you had to rate the factors influencing the buying decision, the ability to run the user's program fast with minimal conversion problems would come first, followed closely by the availability of Unix with good Fortran and C compilers. Given that, price then becomes a major consideration. Eventually, the availability of software application packages is expected to grow in importance.

The primary buying decision is still based on price/performance and ease of use, Serlin says. It is the ease-of-use issue that slows the more exotic architectures and materials from winning over converts.

"The advent of PCs fundamentally changed the rules in buying computers," Brooks says. Because of the PC, users realized that they didn't have to be scientists to compute. Even minisupercomputer buyers could demand that computer manufacturers deliver products that run the users' applications without the users having to perform hardware and software engineering tasks.

"These people just want to get the job done," she adds. "They don't want to be computer scientists." •

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TAKING CHARGE

*Don Ferruggia*

# Contrasts in style

Most of us who are involved with information systems, either on the computer side or the user side, feel that computer people, especially programmers, are somehow different from the other people we know.

This has been difficult to substantiate scientifically, however, since most personality tests show computer people to be similar to the general population.

An informal survey I've been taking shows a big difference between computer people and others in one area that directly affects work habits, and this difference helps to explain a lot of the friction that occurs between computer people and users. When faced with a task, there are essentially two ways it can be approached: rule-based and choice-based.

Someone who is rule-based believes that there is a right way to accomplish any task and, when given a task to do, wants to be told the exact procedure to follow in order to complete it. When the same task must be done again, he will happily follow

*Continued on page 79*

# Reconstruction era

*Brzezinski directs multifaceted Quaker rehab*

BY JEAN S. BOZMAN
CW STAFF

When Ronald Brzezinski came to Quaker Oats Co. in 1985, the company's mainframe resources were sliced into dozens of unrelated applications.

"Everything was on the mainframe, but it was really a lot of resource divided into islands of data," recalls Brzezinski, 50, vice-president of the Quaker Information Systems division. "Nothing was tracked."

Pulling Quaker's MIS in different directions were the varied needs of each division in the $4.4 billion food and products company. Each wanted different types of reports generated from data stored on the mainframe. The consequences of giving each business unit a piece of the mainframe pie were often duplication and inefficiency, Brzezinski says. The requests were also taxing on Quaker's central MIS.

**Turnaround**

Brzezinski worked to turn that situation around with a budget that is roughly 1% of Quaker's multibillion-dollar operating revenue. His primary goal was to centralize the corporate database while standardizing distributed systems and end-user access tools.

At the same time, Brzezinski moved to distribute MIS personnel, placing many workers in company business units. In 1985, Brzezinski also created the client services manager post to identify user complaints before they turned into problems. Working with the client services manager, who is stationed at the firm's Chicago headquarters, are users at Quaker's factories. "They are our eyes and ears in the departments," he says, "and we tell users who want to get Information Systems help to go through the client services manager."

Just as end-user applications have been pushed out to user locations, distributed systems have taken on a standard profile. Twelve factories, scattered across the U.S., now have similar Digital Equipment Corp. VAX 8200 systems. "We had 13 plants in 1985," Brzezinski says, "and we also had 13 different payroll systems."

The dissimilar plant payroll systems have been replaced by a standard one, even though the application runs in different locations. A new plant maintenance application — also standard — has been deployed on the VAXs. "We anticipate major paybacks on plant maintenance systems," Brzezinski says.

To ease the transition to new systems, Brzezinski added new management elements, including MIS task forces, at Quaker plants. "We have a lot of steering committees that allow us to coordinate the technology change while listening to the plants' needs," he says. "We're distributing systems ownership and technology to the business units

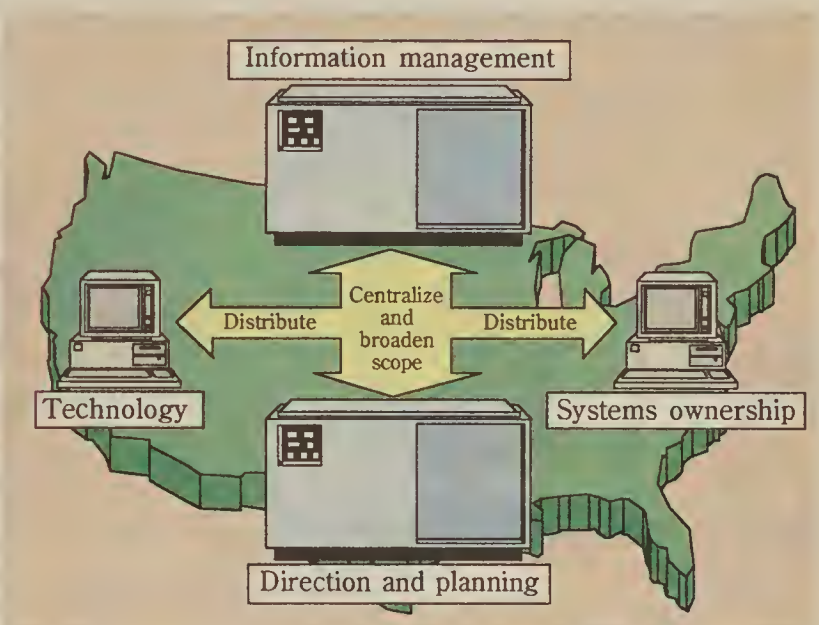
*Continued on page 80*

PROFILE

Ronald Brzezinski

**Position:** *Vice-president of Information Systems division, Quaker Oats Co.*
**Mission:** *To centralize the corporate database while standardizing distributed systems and end-user access tools and reorganizing MIS group to support his strategy.*

**Sowing a systems strategy**
*Quaker Oats rolls together decentralization and centralization*




SOURCE: QUAKER OATS CO.
CW CHART

# Beware gentle readers: Business etiquette may spell your success or your failure

BY J. A. SAVAGE
CW STAFF

SAN JOSE, Calif. — It is not a matter of style over substance, says business etiquette consultant Ada Marie Barnett. If you have the style down pat, the substance shows through.

The problem for executives is that they learn substance during their schooling but are given no clues as to style. "They just don't know the rules that govern business etiquette," Barnett says. "I saw people in corporations who were talented but didn't know the rules. They blamed not being promoted on everything else but lack of etiquette because no one would tell them what they lacked."

Conducting business in the high-tech world is fraught with pitfalls of bad manners, Barnett says, because those drawn to the business tend to be young and aggressive. "You get your degree and you go out and make mistakes. Time was when engineers sat in the back room and no one ever saw them — that's not true today," she says. "High-tech people have to interface."

Barnett tells of a meeting in which several engineers, called in to explain their product, showed up wearing Hawaiian shirts and sandals. After the first half-hour, the business-suited nonengineers said, "These people are brilliant." But Barnett

**Ada Marie Barnett**

despairs that it took that long for the brilliance to radiate through the inappropriate dress.

The following is a smattering of Barnett's guidelines in business etiquette.

• **Dress.** Wear appropriate attire. Invest in classic designs. The less one detracts from one's face, the more another person will focus on that face. Thus, the substance of contributions from someone with fewer distractions will make more of an impact on the audience. Dark colors and barely perceptible patterns are de rigueur.

• **Introductions.** Always introduce yourself with both first and last names. Barnett suggests shaking hands as soon as introductions are made. "Traditionally, the male of the highest rank offered a handshake first. That is no longer true." And she suggests women stand, even in a restaurant, upon introduction. Women should offer firm, not wimpy, handshakes, even to other women, because women evaluate personality through handshakes just as men do. Offer your business card as soon after the introductions as practical.

• **Meetings.** Begin and end business meetings on time. The chairman (Barnett underscores that the title is either chairman or madam chairman) should not allow interruptions or allow attendees to get off the subject. Tangential subjects should be taken up at subsequent meetings, "rather than waste people's time," Barnett says.

Beware of aggressive behavior. "The first thing an aggressive person will do is rush in and sit on the right side of the chairman," Barnett says. Instead, allow the chairman to dictate seating or sit according to rank.

• **Gifts.** Never make a gift seem like a bribe; it should be a message of thanks. Barnett suggests that a gift need not be expensive but must be of high quality. "It's better to give one half-pound of

*Continued on page 78*

MANAGERS ON THE MOVE

# Carberry rises to VP at Orion

**Mark A. Carberry** has been promoted to vice-president of MIS at **Orion Pictures Corp.** in New York.

Since joining the motion picture company as director of MIS in 1985, Carberry has reorganized the firm's data processing activities, developed systems for new lines of business and installed a company-wide office automation system.

"The company has seen substantial improvements in the management and performance of its data processing activities under Mark's leadership," said Orion Senior Vice-President and Chief Financial Officer Edwin L. Schwartz.

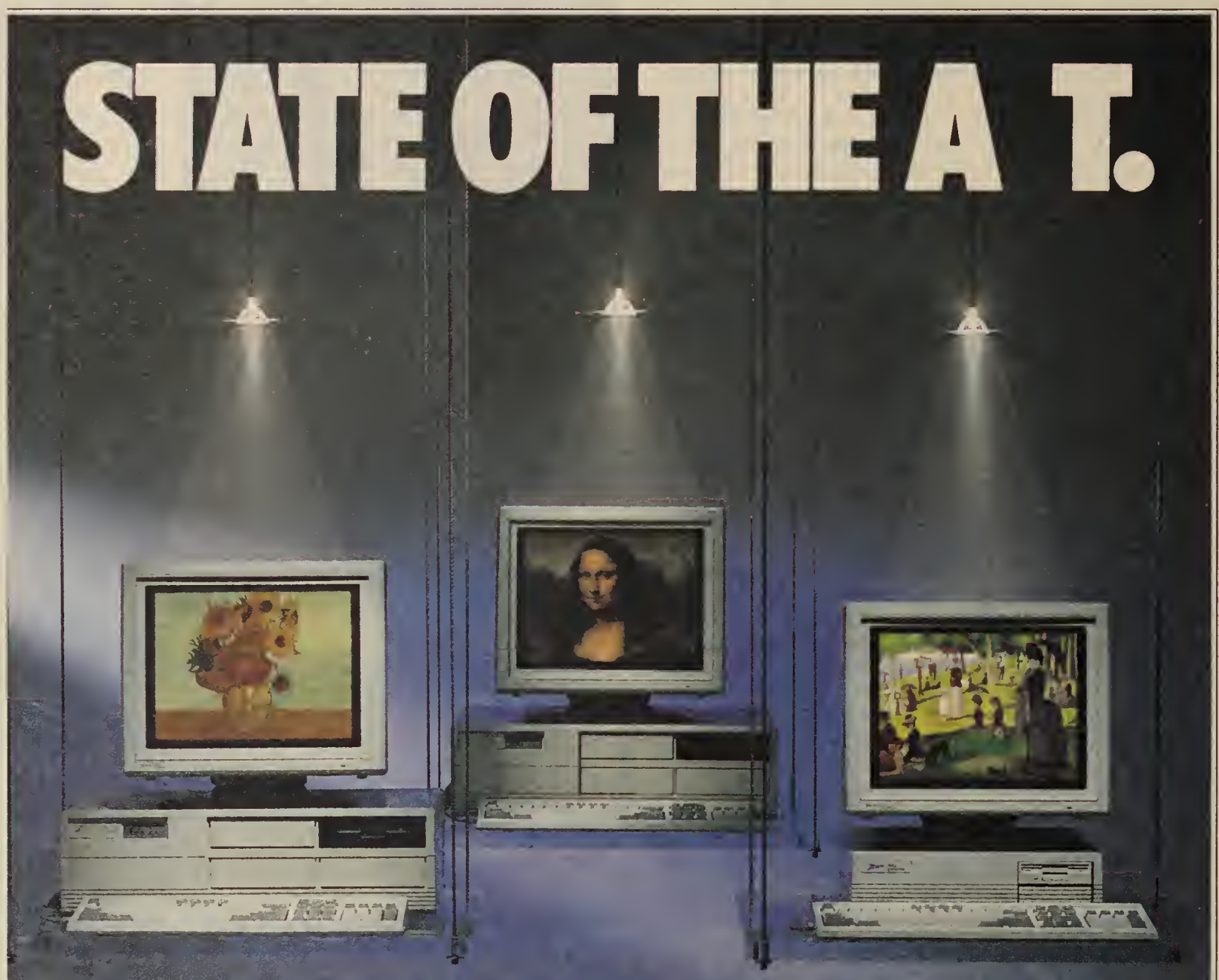
Carberry is a graduate of The Wharton School Graduate Division of the University of Pennsylvania. He previously worked as vice-president and product development manager at Citibank N.A. and as a management consultant with Cresap, McCormick & Paget.

**Mitsubishi Motor Sales of America, Inc.** recently named **Esther Delurgio** to the post of director of information systems with responsibility for the Fountain Valley, Calif., company's entire systems activities, including analyzing current systems and overseeing new systems software development.

The U.S. car and truck distribution arm of Mitsubishi Motors Corp. said Delurgio's experience will help Mitsubishi to enhance communication with the organization's dealer network as well as with the management of internal office automation efforts.

**Allan W. Ditchfield**, vice-president of MIS operations at **MCI Communications Corp.** in Arlington, Va., has been promoted to senior vice-president of MIS.

He joined MCI in 1986 after working at AT&T Information Systems for five years as director of planning and controls and director of systems. A graduate of Northeastern University, he previously worked for The Foxboro Co. and IBM.



# Readers beware

CONTINUED FROM PAGE 77

good candy than five pounds of cheap candy.

"It is never incorrect to send thank-you notes," Barnett says, but she cautions that the best ones have a personal touch and are not simply run off by a secretary. The use of electronic mail for thank-you notes is acceptable but not desirable.

• **The telephone.** "The telephone is the most powerful tool we use today. It always shocks me when someone answers the phone who doesn't speak English," says Barnett, who suggests it is a mistake to hire a receptionist with a poor command of the language.

Also, it is "good-bye," not "bye-bye," at the end of a conversation.

Four-letter words are never acceptable in the business world. "By using swearwords, you are hurting your company," she says.

• **Business meals.** While business breakfasts have become more common, employees must determine the difference between an invitation and a command performance. "Or you may not find yourself invited to meetings at other times of the day," Barnett says. Accounting for different levels of grogginess in the early hours, Barnett says that attendees do not have to eat.

According to Barnett, the host determines when you start to eat and when you do business. The meal generally ends at the host's suggestion, she says. But if you have an appointment after the meal, the host should be notified before you sit down.

For lunch and dinner, "The limit is two alcoholic beverages at a meal," Barnett notes. She adds that just because one person may or may not drink alcohol does not mean that others must follow suit.

Herself a four-pack-a-day smoker, Barnett says that smoking should not occur during meals. Whether or not smoking is allowed prior or subsequent to the meal depends on whether the host picks a smoking or nonsmoking section of the restaurant.

• **Families.** "It's a fact of life that spouses are on display," she says. "Companies want to see both of you." And while Barnett says it is not incorrect to let the company know you have a family, "talking about the kids' tonsils" is not a good idea.

• **Relationships.** Treat everyone with respect; that is the underlying etiquette of the workplace. "The workplace is not a place for waging the battle of the sexes," Barnett says. If confronted with sexist language or attitudes, Barnett advises an executive to "consider the source." A disrespectful person is often disrespectful in general.

Women often think differently than men. Barnett says the difference should be sought out and taken advantage of "to make the company grow."

• **Business travel.** In automobiles, the person driving is the host, and the host should set the parameters of the trip and attend to the passenger door, regardless of gender.

Anyone carrying a briefcase on a plane should be left alone.

And, lest a traveler forgets, Barnett says that it is acceptable to have up to two drinks in a bar with a stranger, "but you don't leave the bar with them."

# Ferruggia

FROM PAGE 77

the same procedure over and over again. He gets satisfaction from completing the procedure and becomes anxious when the procedure doesn't work or must be changed.

Someone who is choice-based, on the other hand, doesn't like to be told how to accomplish a task and hates to do anything the same way twice. If given a set procedure to follow, he would rather ignore it or "improve" it with his own modifications. If the task is one that must be done repeatedly, he will become bored or will continually try new ways of completing it.

My experience has been that the general population, including users and higher management, is about 70% rule-based and 30% choice-based. I have found computer people, including programmers, analysts and their direct managers, to be more than 80% choice-based.

COMPUTER people are often late in delivering products because they keep adding new complexities to the product.

Operations people seem almost 100% rule-based.

How does this explain the friction between computer people and users? Well, let's consider the main complaints of users about computer people: They're always late and they're constantly changing things.

Computer people are often late in delivering products, not because they are bad estimators but because they keep adding new complexities to the product. It turns out that one thing won't work as well as they thought, another thing needs a total revamping and some aspect of a third thing pops up and needs attention. Even when doing minor revisions, programmers often make unrequested or cosmetic changes "because we were working on that area of the code already."

All this revision arises from the choice-based person's need to tinker. The longer choice-based people work on a project, the more "improvements" are going to be considered essential.

What are computer people's complaints about users? They don't know what they want and they sign off on proposals only to disavow them later. Even asking a rule-based person what he wants can put him in a state of panic; the idea of being able to choose feels like falling from a plane with no parachute.

Rule-based people want things to work the "right way," which usually means exactly what they are doing now. If you hand them a proposal, chances are they'll sign it because it's a concrete procedure that makes them comfortable. If they later see a system that works better than theirs, then that becomes the right way, and that's what they'll want. If you deliver a system and it isn't as easy as their current one (and "easy" here doesn't mean "less work," it means "fewer choices to make"), they complain that it's not what they wanted.

What are operations' complaints? They don't have all the detail they need and the exact procedures to run the jobs, and programmers don't follow all their rules. This is a basic conflict of choice-based vs. rule-based people.

What can be done to overcome these problems? First, discipline on the systems side to "build it first, fix it later," to keep new systems as much like the old ones as possible and not to introduce change just for the sake of change. Prototypes are an excellent way to give users a concrete understanding of what they're buying.

Finally, those computer people who are rule-based can be used very effectively as user and operations liaisons. Users who are choice-based are not as effective as liaisons because they tend to raise the level of tinkering, not reduce it.

Ferruggia is a psychologist and president of Personal Excellence, Inc. in Warwick, N.Y.

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# Reconstruction

CONTINUED FROM PAGE 77

and the factories, but it's being done under the guidelines and direction of IS."

Back at headquarters, the central site also took on a new look. Quaker is in the late stages of moving its Burroughs Corp. 7900 applications over to two IBM 3081 mainframes, which will soon be upgraded to IBM 3090s. Only the firm's Fisher-Price Toys division retains a follow-on to the 7900 systems, a newer Unisys Corp. A17.

"I think there's been a tremendous change in the technology base since Ron Brzezinski came on board," says Gary Rietz, manager of systems auditing at Quaker. "We're trying to put together a technology utility for applications. Because he moved us toward IBM, we now have a lot more choice in DBMSs, off-the-shelf application packages and system monitoring software.

"Because he placed VAXs at the plant level, the factories now have some general-purpose computing resources they never had before."

The theme of standard systems and standard access methods has created an environment in which end users create their own ad hoc reports. Those users can now download mainframe data to desktop computers for spreadsheet analysis.

Quaker acquired off-the-shelf software tools, including Lotus Development Corp.'s 1-2-3, to access and analyze mainframe data. "Today, people are demanding data instead of demanding that IS get reports done for them," Brzezinski says. "They are getting more data than ever before because they now have the software tools to get at it."

> "TODAY, people are demanding data instead of demanding that IS get reports done for them. They are getting more data than ever before because they now have the software tools to get at it."
>
> RONALD BRZEZINSKI
> QUAKER OATS

Quaker uses Computer Corporation of America's Model 204 for a mainframe database. Fourth-generation languages allow users to customize queries. As a consequence, Quaker's applications backlog has been reduced, freeing dozens of MIS programmers to act as consultants. Today, there are just 60 application programmers at headquarters.

The rapidly changing nature of the food industry is what drove Quaker's move toward standardization, Brzezinski says. "The need to react to a changing business started driving demand for better systems," he says. Quaker makes a variety of goods, including Quaker Oats, Gatorade, Rice-a-Roni, Van Camp's beans and Kibbles 'n Bits 'n Bits 'n Bits dog food.

Sales of these products must be constantly monitored, based on updated reports from supermarket receipt clearinghouses and reports based on checkout scanners. "When the rate of business change is so great, you need reliable systems," Brzezinski says. "Now we have standard systems but many ways to access the same data."

### Well-balanced

A former Nolan Norton & Co. consultant and Purdue University professor, Brzezinski has studied management from both the academic and the practical points of view. Restructuring the organization was just as important as reconfiguring the mainframe room, he says.

When Quaker moved the corporate information center to the mainframe help desk in 1987, it was to provide a standard response to technology problems, whether they affected microcomputers or mainframes. "You can always bring in new technology to solve problems," he says. "But once that technology is in place, you need to install an infrastructure to support it."

Brzezinski, with a background as an MIS manager and a consultant, seemed ready to enforce a new technology strategy, Rietz says. "There was a significant interest by top management in getting someone who understood that the technology supporting the business needed to be upgraded," he notes. "There was a feeling that the IS manager needed to have a vision of where the company was headed in terms of technology and the ability to orchestrate a change in the corporate IS culture.

In the face of continuing change, Brzezinski hosts lunch meetings of department managers, middle managers and end users at headquarters every three to five weeks. The meetings give the MIS staff feedback on problems and products.

Looking back on the task of reversing the direction of MIS at Quaker, Brzezinski says that nothing less than the corporate culture had to be tackled. "It's a hard struggle," he says. "We spent a lot of money on training. But the hardest job was changing the mind-set of our own IS staff. Our focus now is not on ourselves. It is on how to plan the technology changes in a way that will most help the business and the end users."

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Lack of unity endangers the promise of DAT

BY JAMES A. MARTIN
CW STAFF

Although digital audio tape (DAT) is not available yet in the U.S. consumer marketplace, the new media is generating interest ... data storage systems with 150M-byte capaci... storage rates of 6M to 7M byte/min.

DAT, or Data DAT (DDAT), as industry insiders call it, promises capacity of up to 1.2G bytes and storage rates of up to 10M byte/min. This represents an improvement over current standard quarter-in. tape cartridge

...ials, speaking to al... ...ters and ana... ...mpared the... systems, such as the ... systems, Inc. Sun ... Apollo Computer, I...

Unisys adds 1100/90 models

*Product line ... memory, lower prices, less in maintenance costs*

...mers were advised of t... ...ust by the Unis... ...Brody.

Storage Tech boosts solid-state...ance:

...rable to the Hitachi convem...

BY JAMES CONNOLLY
CW STAFF

LOUISVILLE, Colo. — ... ogy Corp. last we... pacity and e... opti...

...ge strategy

Codex reveals net manage...

...grated line of communications produ...

AT&T spells out net contr...

BY ALAN ALPER
and ELISABETH HORWITT
CW STAFF

NEW YORK — AT&T last week announced plans for a unified network management architecture that potentially would allow its cust...mer-premise equip...

The architecture is expected to evolve during the next couple of years, AT&T said. The company intends to publish initial NMP specifications within the next few months.

By publishing the spec... tions, AT&T ...

T1 network... AT&T s... clear as to w... ny's existing network man... will be bro...

DB2 advantages require hard sel...

*Development benefits over IMS seen d...*

...BABCOCK

...bank's Ready Te... IMS Fast Path, ... complex DB2 a... ...ustom...

Wang takes Ethernet plunge

*VS host links are first step on road...*

BY ELISABETH HORWITT
CW STAFF

LOWELL, Mass. — ... to user demand ... connectiv... ries...

*...ndor networking*

...ide multivendor com... ...ns through the ISO ...stems Interconnect ...ut declined...

...can put the entire VS family on Ethernet."

Wang's decision to implement 802.3 on the VS acknowledges growing support for 802.3 as an industry standard as well as user demand for cost-efficient connectivity between VS systems and other vendors' computers,

NEC releases hard-disk Multispeed lapto...

WOOD DALE, Ill. — A hard-disk-drive ... of its Multispeed IBM-compatible ... last week by NEC ...

electroluminescent supertwist LCD screen ... No ... slots ... have ...

640K bytes of nonexpandable ... cess memory and uses a NEC ... that runs at either 4.77 or ...

SOFTWARE NOTES

Broker workstation tools ...

...tive Software, Inc. in ...n., will provide soft... series of intelligent ...rkstations to be pro... ADP Financial In... ...n Services, Inc., a ... of Automatic Data ...ng, Inc. The works... tions will be designed to replace quote machines with systems that can provide client information, portfolio analysis and modeling options.

Hewlett-Packard ...

And...

IBM, Fuj...

BY CLINTO...
CW ST...

...ile: Ma...
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...announc... ...ysts disap... ...manage... ...125.

...nolo... ...data ... ...on HI... ...tions, ...stat...

Hot future for DP pros

...Empl... ...rate software ...gra... ...groups, Lotus ...ware, is preparing ...

MAP users group lays down law

BY KATHY CHIN ...
CW STAFF

...ability gets blown out of ... ...ter," said Michael Kolowich, vice-president of corporate marketing and information services

IBM slow to reme... ...aky DB2 security

INFORMATION PRO...

...hens to up...

...Automation ...nal applications ...enefit program,

Not only is development time compressed, but program ... fications and ...

...ge ac... ...istribute... ...ughout their ...cation ...

INDUSTRY INSIGHT

*Clinton Wilder*

## How the minis have fallen

**Shakeout season.** In January 1987, Prime Computer's Carl Ledbetter dazzled a press gathering at Prime's Natick, Mass., headquarters with his wit, his ability to solve Rubik's Cube in seconds and his pitch that Cydrome's minisupercomputer technology would revolutionize the industry.

Nineteen months later, Ledbetter has a new job in Minneapolis, Prime has thrown the minisuper out and Cydrome, after chopping 42% of its jobs, hopes it can survive on its own in a market suddenly littered with shattered promises. The long-predicted minisuper shakeout has arrived with a vengeance.

Although the evidence is everywhere from the Connecticut coast (Multiflow) to Silicon Valley (Elxsi, Saxpy), the Prime-Cydrome divorce is the most telling and visible example. Here was a marriage made in heaven — a hot start-up's breakthrough technology matched with the very attributes so many start-ups lack: the wherewithal and corporate credibility to market that technology worldwide.

Recalling Ledbetter's slide show that chilly January day, Cydrome was going to outprice and outperform Convex, Alliant and various other competitors, bringing Prime into the forefront of this exciting new market.

**Reality strikes back**

As has happened so many times, however, the irresistible force of technology advancement ran into that immovable object of market and economic reality. When Prime's $5.1 million Cydrome write-off led a spate of minisuper bad news late last month, analysts were unanimous in their assessment: There were simply too many minisupercomputer companies chasing too few buyers and dollars.

For many vendors, the problem is as simple as a Wendy's hamburger: Where's the software? You can run all the MIPS, MFLOPS, Whetstones and Livermore Loops that you want, but the chemical engineer or seismologist sitting at his terminal

*Continued on page 86*

# Micom buy-out disappoints

*Communications vendor bought for $300M; stockholders wanted more*

BY PATRICIA KEEFE
CW STAFF

SIMI VALLEY, Calif. — Micom Systems, Inc., a supplier of communications equipment, last week agreed to be acquired by MS1 Acquisition Corp. for approximately $300 million, or $16 per share.

MS1, a company formed by New York investment firm Odyssey Partners for the purpose of acquiring Micom, has commenced a tender offer for all of the nearly 19 million outstanding common shares. That offer will be followed by a merger in which any remaining Micom stockholders will receive the same price per share in cash. The acquisition is expected to be consummated in 30 days.

Almost a month ago, Micom rejected a joint acquisition offer made by two other New York venture capital firms — Welsh, Carson, Anderson & Stowe and Warburg, Pincus Capital Co.

The two firms offered $15.62 per share for Micom's then 18.7 million outstanding shares only if two divisions — Micom-Interlan, Inc. and Micom Digital Corp. — were sold. Otherwise, the offer, which expired July 20, dropped to $12 per share.

Micom and some of its investors reportedly were holding out for more money. "I think there was some concern, also, that the offer was less than solid," said Robert Wilkes, an analyst at Brown Brothers Harriman & Co. in New York, in an interview last month.

**Circle unbroken?**

The MS1 purchase price brings Micom back full circle to its April self-tender, also at $16 per share, which was an unsuccessful bid to buy out several large investors. Analysts were not impressed with the winning bid and speculated that $16 per share was Micom's absolute minimum purchase price.

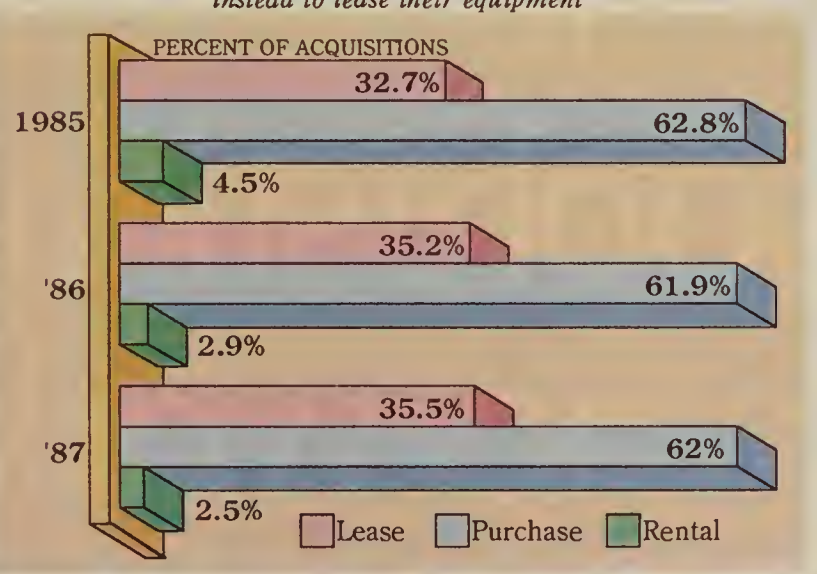
"In a sense, this is a capitula-

*Continued on page 84*

## Data View

### Not for rent

*Fewer companies are opting to rent computer systems, preferring instead to lease their equipment*




SOURCE: COMPUTER ECONOMICS

# Trade bans vex Soviets

BY PATRICIA KEEFE
CW STAFF

NATICK, Mass. — Soviet computer experts say that if the U.S. didn't "discriminate" against the Soviet Union, it wouldn't have to acquire Western technology through what the Soviets call "third parties."

That sums up the viewpoint of a delegation of six Soviet scientists and computer experts. They were in the U.S. for two weeks recently to meet with about 20 companies interested in marketing their products in

*Continued on page 86*

# Japan now land of rising Sun

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. stepped up its assault on the Japanese market last week with a five-year OEM agreement with Japan's No. 1 computer vendor, Fujitsu Ltd.

Under terms of the deal, valued at $280 million, Fujitsu will private-label Sun's Sun-3 and Sun-4 workstations and file servers as Fujitsu S Family Systems.

The companies estimated that Fujitsu will sell 15,000 Sun units in three years. Sun, through direct sales and other OEM deals, is already the leading workstation supplier in Japan.

In an ironic twist, Fujitsu will be selling a Sun product for which it already makes the microprocessor. The Sun-4 is based on Sun's Scalar Processor Architecture Computer chip, which is manufactured by Fujitsu Microelectronics, Inc., a Fujitsu subsidiary based in Santa Clara, Calif.

Fujitsu will market both Sun hardware and SunOS, which combines University of California at Berkely's Unix 4.2 and AT&T's Unix System V.

**Inside**


- Cullinet sells Computer Strategies division. Page 84.
- NEC-Intel battle is in the homestretch. Page 85.


# Oregon: Massively parallel state

BY J. A. SAVAGE
CW STAFF

BEAVERTON, Ore. — Only a few people arrive in Oregon to make big bucks in the computer industry. The state's lush forests and meandering rivers are more likely to attract anglers and lumberjacks than computer engineers and high-tech marketers.

But Oregon appears to have discovered its high-tech niche in parallel computing. And a unique partnership among industry, academia and state government has formed a research consortium to help the state's computer vendors exploit the benefits of parallel processing.

Within 20 miles of Portland, there are at least five computer firms that concentrate on parallel processing technology: Cogent Research, Intel Corp., Floating Point Systems, Inc., Ncube and Sequent Computer Systems, Inc. The suburban area west of Portland is often referred to as the "Silicon Forest."

**Oregon Institute's Bhagwan**

Other than architecture, what those companies share is a lack of the research and development resources that the computer industry's big players enjoy. Add to that a state government searching frantically for a handle on economic development and an academic institution specializing in computer sciences and engineering, and poof — the Oregon Advanced Computing Institute, or Oacis, was born.

Formally established last month, with the appointment of Intel's Sudhir Bhagwan as its director, the center will supply R&D to the area's computer firms.

"If left to the university researchers, the [research] would probably be spacy and would never amount to much. If left to business, it would be too short-sighted, too worried about revenues," said Ncube Executive Vice-President William Richardson. He added that Oacis will likely stike a balance.

As a small company, Ncube welcomes Oacis. "If you're IBM, you can research anything you want. We're worried about staying in business," Richardson said.

**Growing up**

Oacis' primary goal, according to its new president, is to develop applications for parallel processing in order to propagate its use. "While the market size is not large, the market growth rate exceeds 50% per year," Bhagwan said.

Rarely does an academic institution admit to such close rela-

*Continued on page 85*

# IN BRIEF

## Cullinet sells CSI

Troubled software giant **Cullinet Software, Inc.** has sold **Computer Strategies, Inc.** (CSI), a division specializing in software for the Pick Systems operating system, to **Velez Consultants International**, Cullinet's European distributor for the CSI product line, for an undisclosed amount.

. . . . . .

## Fibronics in black

Christmas arrived early in Hyannis, Mass., as fiber-optic equipment maker **Fibronics International, Inc.** announced its first quarterly profit in two years. Revenue for the third quarter jumped 20% to $8.7 million, while net income was logged at $353,000, or 6 cents per share, compared with a net loss of $660,000, or 8 cents per share, for the same period in 1987.

. . . . . .

## Compugraphic ails

**Compugraphic Corp.**, a Wilmington, Mass.-based electronic publishing systems maker, has sliced into its ranks and laid off 320 of its nearly 4,000 employees as part of an ongoing program to cut expenses.

. . . . . .

## Ardent gets $25M

Japanese industrial equipment maker **Kubota Ltd.** will pump $25 million into the coffers of Sunnyvale, Calif.'s **Ardent Computer Corp.** Ardent President Allen H. Michels said the money is expected to support the firm, which produces the Titan graphics supercomputer, until its initial public offering, which could possibly take place as early as 1990.

. . . . . .

## Amdahl stock splits

**Amdahl Corp.** has announced a two-for-one split of its common stock for shareholders of record as of today. The new shares will be issued to stockholders of the Sunnyvale, Calif., systems maker beginning Sept. 2. The company also announced a cash dividend of more than two cents per share on the post-split shares.

. . . . . .

## Clear the way

Network management upstart **Clear Communications Corp.** has announced an infusion of $2.5 million in venture capital into its war chest. The cash influx, from **Accel Telecom Partners** in Ann Arbor, Mich., and Boston's **TA Associates**, represents the initial financing for the firm, which was founded earlier this year and will offer vendor-independent network management tools that monitor and maintain links in wide-area networks.

# Micom

CONTINUED FROM PAGE 83

tion, and I would expect some sense of disappointment among Micom shareholders that this is all they're going to get," said Andy Schopick, an analyst with Gartner Securities Corp. in Stamford, Conn.

Micom posted revenues of $223.4 million for its fiscal 1988, which ended April 3.

Banking giant Manufacturers Hanover Trust Co. has committed to providing Odyssey with $220 million in senior debt financing, along with Drexel Burnham Lambert, Inc., which said it "is highly confident that it can supply $125 million in junior financing."

In part, Micom may have settled for the 38 cent-per-share increase over the earlier offer out of fear that the dragged-out process was hurting sales. Uncertainty as to the ownership of the company may have affected Micom Digital, a T1 supplier purchased in January.

"We do believe this has affected our ability to make progress. We have a number of expectant T1 customers, and many are delaying purchases or have not come to a decision yet," a Micom spokeswoman conceded last month. She noted that the T1 sales cycle is a long one.

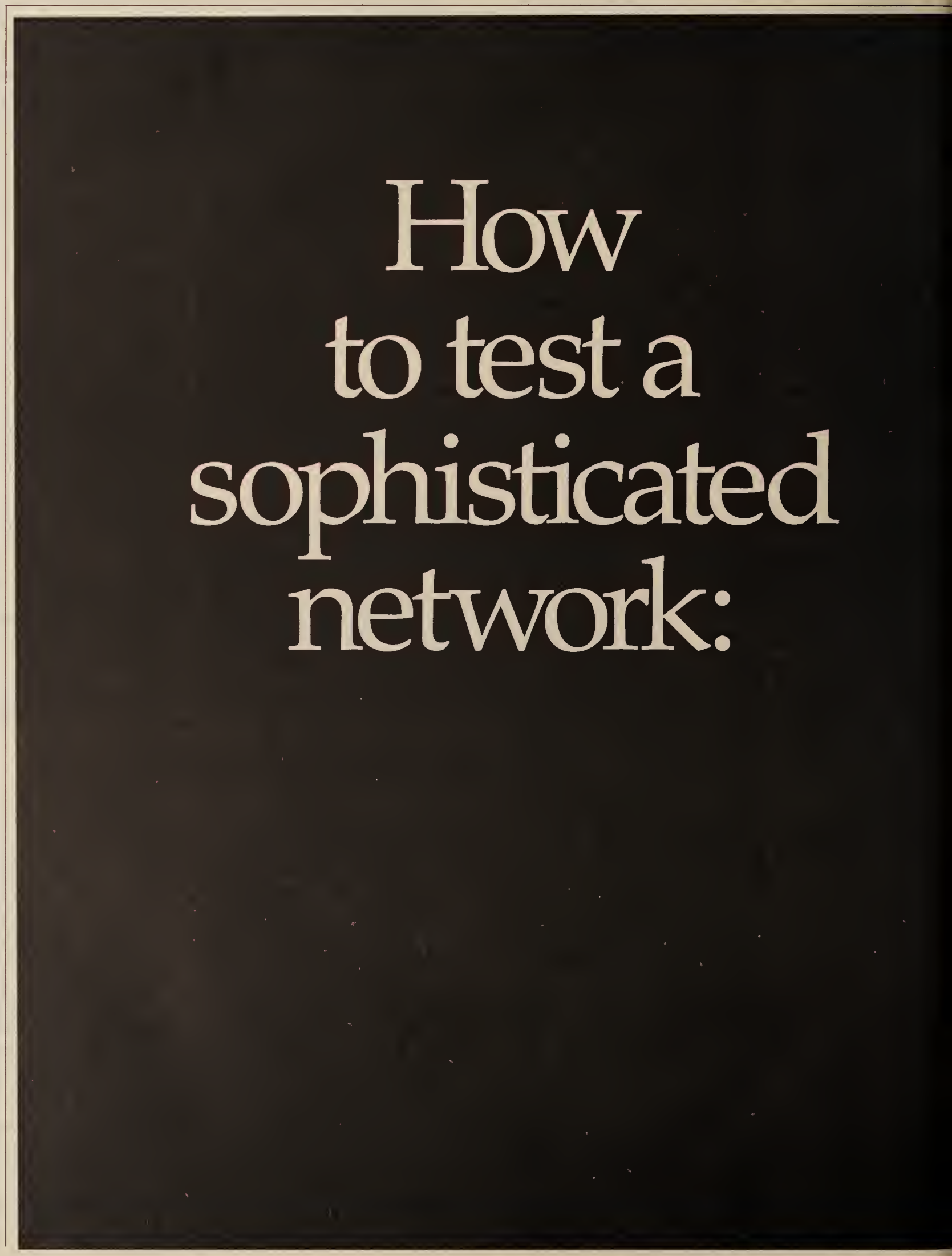
### Pressurized

Schopick suggested that the five-month search for a buyer created huge business as well as financial pressure for Micom management.

Still unclear is the disposition of Micom's three divisions, including Black Box, a mail-order catalog outfit.

"Obviously, there's much uncertainty right now, and you'll see a lot of positioning and maneuvering" in the next few weeks, Interlan President Mike Barker said.

His firm is expected to be first on the block, according to analysts, who noted there is little love lost between Micom and Interlan executives. Potential buyers include Digital Communications Associates, Inc., Network Equipment Technologies, Inc. and possibly even Digital Equipment Corp., which is reportedly seeking an investment in IBM connectivity technology.

# NEC-Intel battle nears end

BY JAMES A. MARTIN
CW STAFF

SAN JOSE, Calif. — After some six years of squabbling, lawsuits, countersuits and intellectual property debates, the NEC Corp. vs. Intel Corp. legal miniseries is about to reach its climax. But not without a cliff-hanger.

Both NEC and Intel have made their closing arguments in this complicated, 4-year-old embroglio, which revolves around the question of copyrighting microcode. U.S. District Judge William P. Gray, who replaced Judge William A. Ingram after Ingram disqualified himself because he owned a small amount of Intel stock, is expected to decide the case in early September upon his return from a month-long vacation.

NEC first sued Intel in 1984, seeking to have Intel's 8086 microcode copyrights declared invalid. Intel countersued, charging that NEC infringed on its copyrights, and the case went on to become legendary in the industry.

Unlike Ingram, who broke the trial's two issues apart for separate consideration, Gray is expected to rule on whether microcode can be copyrighted and whether NEC infringed on Intel copyrights with its V series of microprocessors.

In brief, here is a history of the NEC-Intel entanglement:

- **1982:** Intel first charges that NEC's 8086 microcode is "a bit-for-bit copy" of Intel's 8086 microcode. This dispute is settled privately in April 1983.
- **Mid-1984:** NEC introduces its V20 and V30 microprocessors as "software-compatible" with Intel's 8086. Intel begins an investigation into the matter.
- **December 1984:** NEC files suit, asking the court to declare that microcode is not copyrightable and that the V series does not infringe on the 8086 microcode copyright.
- **February 1985:** Intel files a countersuit, alleging that the V series does indeed infringe on its microcode and seeking a ruling that microcode is copyrightable. The motion is denied in August.
- **October 1985:** NEC files a summary judgment motion to have Intel's copyrights declared invalid on the grounds that Intel did not take the minimal steps required to protect them. The motion is denied in January 1986.
- **March 1986:** The court rules that Intel's request for damages and NEC's charge of unfair competition by Intel must be severed from the main trial.
- **May 1986:** The trial begins in San Jose with Ingram presiding. The trial is continued until July 10.
- **Sept. 1986:** In a landmark ruling, Ingram declares that microcode can be copyrighted and that Intel's copyright is valid. The issue of whether NEC violated the copyright is not decided.
- **November 1986:** NEC moves to disqualify Ingram because of his indirect ownership of $80 worth of Intel stock. The motion is denied in March 1987, and NEC appeals.
- **August 1987:** Intel asks the U.S. Customs Service to block imports of NEC V series microprocessors. In December, Customs says it will not take action on Intel's request.
- **December 1987:** Ingram disqualifies himself from the trial and vacates his earlier ruling. The case must be retried.
- **January 1988:** Gray is assigned.
- **February 1988:** NEC files a motion, as it did in October 1985, seeking to overthrow Intel's copyright claims.
- **March 1988:** Intel's expert witness reverses his testimony, saying that a portion of the original NEC microcode is not similar to Intel microcode.
- **April 1988:** New trial begins. NEC's emphasis this time is on trying to prove that even when developed in a clean-room environment, microcode similarities are inevitable.
- **July 29, 1988:** Trial concludes.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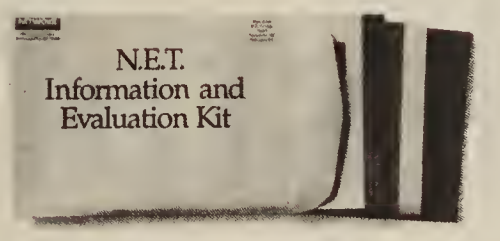


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* *FORTUNE* magazine March 28, 1988.


# Oregon

CONTINUED FROM PAGE 83

tionships with industry, but Oacis' mission is industrial development, according to Jim Huntzicker, president of the Oregon Graduate Center, Oacis' parent organization. "We have the same ambitions as Stanford, but Stanford didn't become Stanford overnight."

To get the institute on its feet, the state will hand it about $5 million from funds gathered by the state lottery. After that, Bhagwan said, he expects industry to pay for its continuation.

The interplay is essential to the architecure's development, according to both academic and vendor sources. The small and start-up companies in the area cannot afford to buy the engineering expertise necessary for expansion.

Once Oacis is under way, the most glaring problem envisioned by Bhagwan will be getting competing vendors to work together to further all of their markets — to get away from the "I did it myself" mind-set.

Bhagwan enumerated several areas of research for the institute once the corporate ego investment is minimized:

- Perfecting development tools standardized for parallel processing architecture.
- Standardizing programming from subsystems in high-level language.
- Standardizing operating systems.
- Increasing the reliability of systems with massive numbers of processors.

# Trade bans

CONTINUED FROM PAGE 83

the USSR.

"What they are saying is, 'We will acquire the technology anyway at any cost, but it's better to do it legally,' which is what U.S. businesses have been saying all along," said Misha Knight, a Russian emigre and a specialist in international trade who is president of Inter-Global Associates in Washington, D.C. Knight maintained that many U.S. firms are starting to realize that the majority of their sales are being made overseas anyhow.

At a briefing here two weeks ago, the delegation, sponsored by Data Ease International, Inc. in Trumbull, Conn., fielded questions on a variety of issues, including respect for copyrights and patents.

Although the Soviets have not yet signed the international software copyright law, Knight said they will. "Intellectual property rights are very important for them, because they prefer to be a reliable customer." They also hope to market their software in the U.S. and Europe.

The Soviets expressed clear displeasure over the U.S. government's policy of providing the People's Republic of China with access to faster, more powerful equipment than is afforded the USSR.

Although the U.S. recently loosened restrictions on technology transfer [CW, Aug. 8], the process is still somewhat inhibitive, as it remains lengthy and continues to prohibit the sales of advanced personal computers to the Soviet Union.

This particularly vexes the Soviets, as they have committed to expanding their current installed base of personal computers from about 100,000 today to 1.1 million by 1990. Because they lack sufficient manufacturing capacity — and because there are quality problems with equipment that is produced — the Soviets are looking to both their neighbors in the Eastern bloc countries and, more important, to the West, to fill the gap.

"It's not fair" to treat the Soviets differently from the Chinese, said Alexander A. Vasenkov, a member of the State Committee for Computer Technology. Knight attributed the difference to the fact that China is not perceived as the No. 1 rival of the U.S.

Another factor impeding Soviet access to Western technology is the Soviet government's insistence on maintaining an artificial conversion rate for its currency. Delegation members conceded that this will have to change.

In the meantime, Knight's venture has executed a gentleman's agreement with the head of the delegation, Anatoly A. Stogniy, deputy director at the USSR Academy of Sciences in Kiev, to help Stogniy's group establish a trading company to earn hard currency. Knight's firm will teach the Soviets how to sell, manage and service computers with two end goals: to sell U.S. hardware and software to Soviet enterprises that have hard currency and to identify Soviet products that can be sold abroad.


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# Wilder

CONTINUED FROM PAGE 83

needs highly specific applications to make use of this leading technology. And who wants to spend thousands of man-hours in software development when such applications are available now?

The minisuper market trouble didn't come out of nowhere. Early signals appeared last fall, when it was noted in this space that both Alliant and Convex warned of below-expectation quarterly earnings.

That was only the beginning. Now Alliant has fallen into the red, and Convex, by far the strongest player in the industry, can't match year-earlier quarterly profits. Not so long ago, industry observers, venture capitalists and stock investors were trying to assess who would prosper in the minisuper industry. Now they are wondering who will survive.

**Watch what we do, not what we say.** Honeywell spun off its computer business when it couldn't figure out how to make money in it. Now it appears the Minneapolis stalwart can't figure out what to do with Honeywell Bull.

During lunch with ex-Honeywell Bull chief Jerome Meyer earlier this summer, the down-to-earth executive focused on the future. With cost-cutting and layoffs well behind him, Meyer was poised to carve out market share for the French-Japanese-U.S. entity. There had been a few rumblings that Meyer might be replaced at the end of this year if Honeywell Bull didn't meet its owners' expectations, but Meyer's long-term outlook seemed to put those rumors to rest.

Wrong again. Just a few weeks later, Meyer found himself back at Honeywell and out of the computer business, with Honeywell Bull in the hands of ex-Apollo President Roland Pampel, who had resigned all of one week before.

Considering the conversation with Meyer, it really strained credibility when the company claimed that his departure was part of Honeywell Bull's plan all along. And it raises serious questions about just where Honeywell Bull fits in Honeywell's corporate plans.

It is a virtual certainty that Honeywell will reduce its ownership to less than 20% at the end of the year, but where is Honeywell Bull going in 1989? Customers have a right to know — if Honeywell has figured it out yet.

Wilder is *Computerworld's* senior editor, computer industry.

# Keeping pace with banking race

*Mergers and acquisitions reduce the head count but refine opportunities*

BY JANET MASON
SPECIAL TO CW

With mergers and acquisitions rife within the banking industry, information systems professionals in the field might seem to be threatened with a career version of musical chairs.

However, banking and MIS observers concur that career opportunities are not so much dwindling as being reshaped. Banks undergoing mergers do cut their MIS staffs, but individuals with solid technical and interpersonal skills are likely to find a position in the field.

"Banks are looking for information systems employees with experience in the industry and expertise in new consumer-oriented applications, and the supply is not keeping up with the demand," asserts Jim Young, a recruiter with the Philadelphia office of Source EDP.

### Hostile environment

Banks are faced with increased competition for financial services, monumental Third World debt and a climate of deregulation. In this environment, mergers and acquisitions can be a must for survival.

When banks merge, they usually bring together sizable data centers with myriad employees and diverse ways of doing things. MIS workers must strengthen their technical skills to streamline systems and use their interpersonal skills to better cope with the changing environment.

Providence, R.I.-based Fleet-Norstar Financial Group illustrates the growing breed of "super-regional" banking companies spawned by interstate mergers. The company was formed last year when Fleet Financial Group, Inc. in Providence merged with Norstar Bancorp, Inc. in Albany, N.Y.

Before the merger, both Fleet and Norstar ran substantial data processing operations. "We are now blending the two together by taking the best of both DP centers," explains Michael Zucchini, executive vice-president and chief information officer at Fleet-Norstar.

The company is eliminating a Rhode Island data center and two others in Maine, retaining some programming staff at each location and expanding the Albany data center. By consolidating the staff along with hardware, software and communication lines, the company is cutting annual DP operating costs by $10 million, Zucchini says.

He emphasizes that Fleet-Norstar will take advantage of an attrition of MIS professionals but must still lay off a significant number of operations workers.

### Skimming the cream

Observers say that through such consolidation, companies seek to retain the best of the MIS employees on the basis of talents ranging from specialized technical know-how to strong interpersonal skills.

"With automated teller machines, communications are more important. Banks are also looking for specialization with on-line database technology," Young says. New consumer-oriented services such as banking by telephone are also important, along with the traditional applications, he adds.

Zucchini agrees that employees need greater specialization. As his data centers are consolidated, employees are being assigned to work on one corporatewide system. Previously, they had worked on a variety of systems for the individual banks. "People have had to reduce their portfolio of systems that they work on and fine-tune their expertise on the new system," Zucchini says.

A new corporatewide system must be flexible to meet the needs of individual bank locations, he notes. "The challenge to IS employees is to understand the mission of consolidation and to improve the flexibility of the systems they are working with," Zucchini says.

Along with gaining specialized skills, the best workers strengthen and use their interpersonal communication abilities. Zucchini says it is imperative that employees communicate with end users about the new system.

The employees also need to communicate with others in the organization about the changes brought on by the merger. "When the changes are ignored, people get in trouble," Zucchini says.

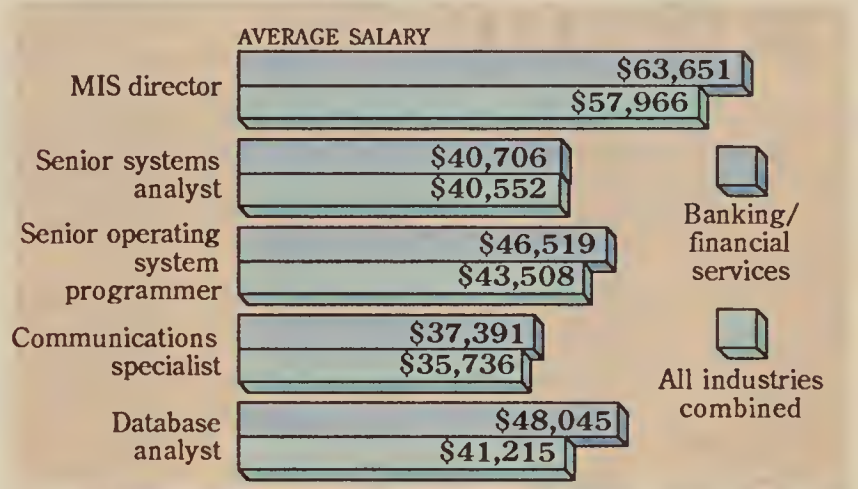
David Gilbert, president of the consulting firm Logica Banking Decisions Systems in Waltham, Mass., emphasizes the need for MIS employees to understand banking. "IS people need to have a broad understanding of the banking business and how it is changing," he says. He advises workers, especially those in lower levels, to take courses on banking and finance to better understand their work.

Although the merger of two data processing departments is likely to reduce the number of MIS employees, Gilbert points out that banks' reliance on technology will continue to grow. "A person may have to switch jobs because of a merger," he says, "but there is always an opportunity somewhere in the industry for a good person."

Mason is a Philadelphia-based freelance journalist.

## Banking's bonus

*MIS professionals in banking tend to earn more than their colleagues in other industries, particularly for more technical jobs*

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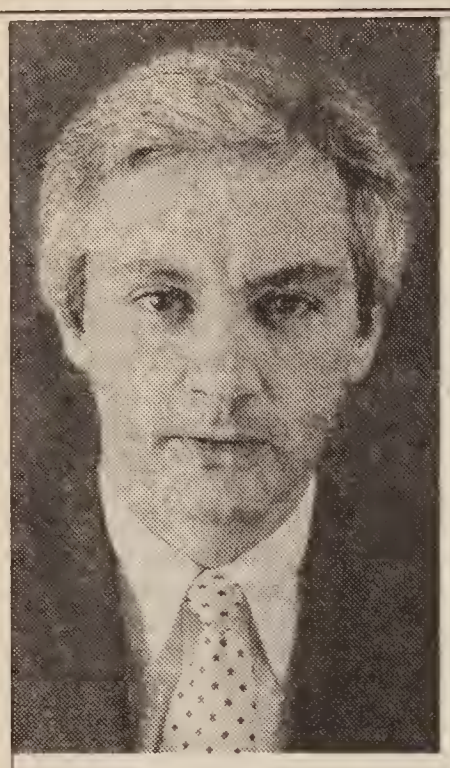

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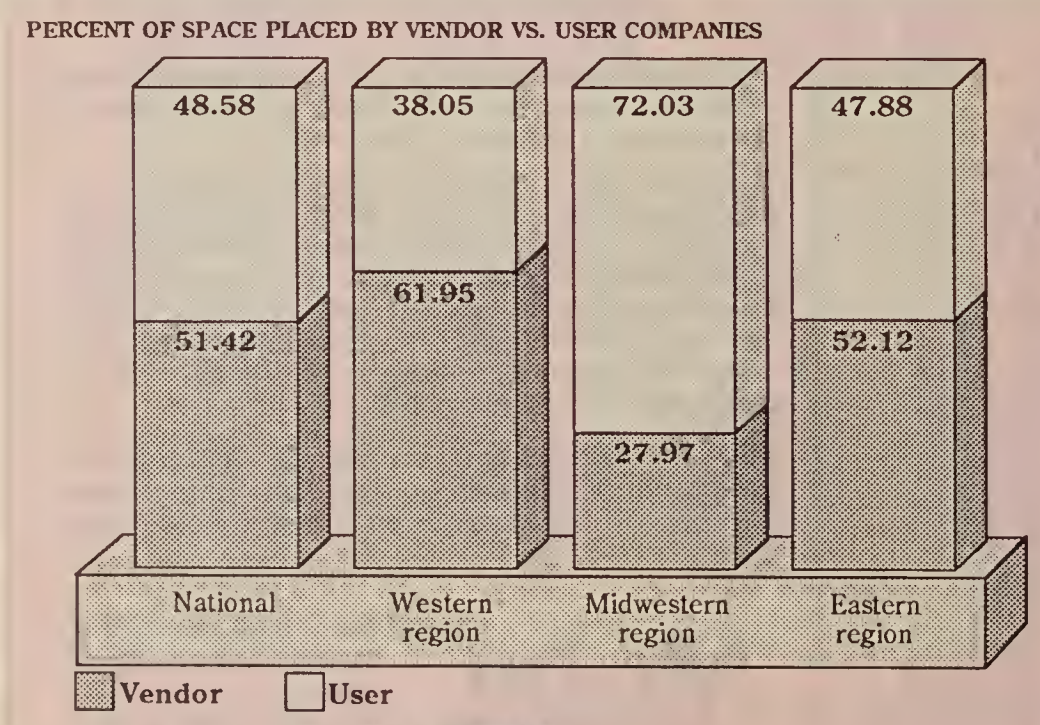


*Analysis of computer recruitment advertising space in *Computerworld* and selected major U.S. newspapers

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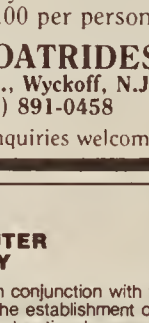

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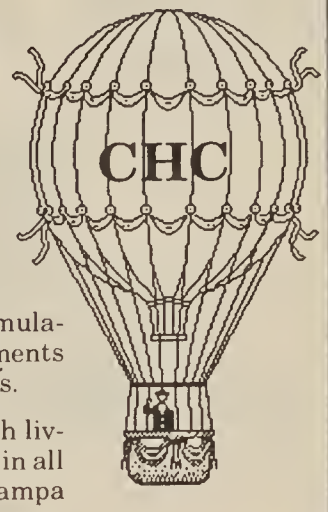


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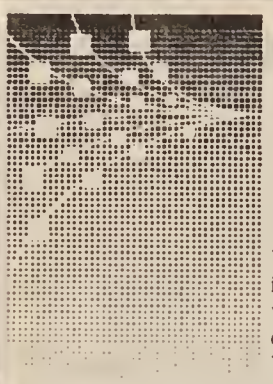

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# Cartridges make it to market

*Plug-compatible competition unravels IBM 3480, 3422 tape monopoly*

BY ROBERT J. CALLERY
IDC FINANCIAL SERVICES CORP.

The IBM 3480 cartridge tape drive began shipping in the first quarter of 1985. From that time until the second quarter of this year, the used market was not a viable alternate source for procuring a 3480. These units have been available on the used market for about one year, and only recently have prices fallen below 90% retail. With prices so high, most end users prefer to acquire products directly from the manufacturer, where they obtain significant discounts through volume purchase agreements.

In the current market, the 3480 Models A22 and B22 are starting to appear more frequently. Because of the increased supply, used prices are declining to levels that offer substantial savings over purchasing new from IBM.

Since this is still the premier cartridge tape drive offered by IBM, why would a company displace one? For more than three years, the 3480 was the only cartridge tape available for large data centers as a replacement for the reel-to-reel IBM 3420. Currently, the plug-compatible manufacturers (PCM) are all shipping 3480 look-alikes, most with features that surpass those of the 3480. For the first time since the 3480 started shipping, IBM is facing competition for its cartridge tape business.

Cost-conscious users seeking better performance in cartridge tape drives are giving the PCMs a look. The consolidation of data centers, bankruptcy cases and over-purchasing are also contributing to the 3480 market supply.

### Library logic

The new, innovative, automated tape libraries offered by both Storage Technology Corp. and Memorex Telex are giving large corporations good reasons to consider a PCM acquisition. These tape libraries are causing data processing shops to take a second look at how they manage data backup.

Although displacement of IBM tapes is sure to become more widespread as competitors nip away at the installed base, the demand for used 3480s is expected to remain healthy. Prices should not decline substantially, since boxes that become available will be quickly placed in new locations. The 3480 market should remain orderly throughout the rest of the year.

With the announcement of the IBM Application System/400, customers soon realized that the only tape available for this system is the newly announced reel-to-reel IBM 2440.

IBM's most recent tape for its System/34, 36 and 38 customers prior to the 2440, the 3422, currently does not attach to the AS/400. This is clearly a black mark on an otherwise impressive announcement. IBM is, however, making an attempt to alleviate any ill feelings the lack of a higher speed tape drive has caused. For customers with installed 3422s who purchase 2440s and install IBM 9406 Models B50 or B60 by March 31, 1989, IBM will refund the purchase price of the 2440 when the 3422 interface attachment becomes available. The interface is slated to be ready by the middle of next year. IBM's intent is to not let the lack of a higher speed tape drive inhibit customer migration to the AS/400.

Reportedly, both Memorex Telex and IPL Systems, Inc. are anticipating first-quarter 1989 announcements of 3422-compatible tape products. There is some question about whether the use of copyrighted microcode in the AS/400 could impact the plans of these vendors to attach their products. The issue of copyright protection vs. the rights of attachment under the 1956 consent decree and European Economic Commission-IBM agreement has wide-ranging ramifications for the PCM and third-party marketplace.

Meanwhile, the supply of 3422s on the secondary market has remained extremely tight. Since IBM customers have the promise of future tape attachment to the AS/400 to cling to, there are no significant reasons for 3422s to appear in volume.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at 617-872-8200.

## IBM tape products

*Current retail fair market value*

| | Date shipped | IBM list price* | Retail percent of list price |
|---|---|---|---|
| 3420 Model 4 | 4Q 1973 | $19,295 | 3% |
| 3420 Model 6 | 4Q 1973 | $22,135 | 4% |
| 3420 Model 8 | 4Q 1973 | $24,285 | 8% |
| 3480 Model A22 | 1Q 1985 | $65,430 | 75% |
| 3480 Model B22 | 1Q 1985 | $43,120 | 73% |
| 3480 Model A11 | 1Q 1987 | $49,080 | NA |
| 3480 Model B11 | 1Q 1987 | $38,810 | NA |
| 3422 Model A1 | 1Q 1987 | $40,480 | 90% |
| 3422 Model B1 | 1Q 1987 | $19,690 | 85% |

* Prices do not reflect IBM's July 28 increases

SOURCE: IDC FINANCIAL SERVICES CORP.
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| XT Model 086 | $1,200 | $1,250 | $900 |
| XT Model 089 | $1,300 | $1,400 | $1,100 |
| AT Model 099 | $2,300 | $2,350 | $1,800 |
| AT Model 239 | $2,600 | $2,900 | $2,300 |
| AT Model 339 | $3,250 | $3,650 | $2,900 |
| PS/2 Model 30 | $1,525 | $1,650 | $1,300 |
| PS/2 Model 50 | $2,300 | $2,375 | $1,900 |
| Compaq Portable I | $825 | $900 | $700 |
| Portable II | $1,850 | $2,000 | $1,650 |
| Portable III | $3,000 | $3,200 | $2,825 |
| Portable 286 | $2,200 | $2,350 | $1,675 |
| Plus | $1,100 | $1,100 | $900 |
| Deskpro 20-MHz | $1,200 | $1,450 | $975 |
| Deskpro 286 | $2,500 | $2,500 | $2,000 |
| Deskpro 386 | $5,100 | $5,100 | $4,600 |
| Apple Macintosh 512 | $700 | $900 | $595 |
| 512E | $800 | $925 | $650 |
| Plus | $1,050 | $1,125 | $850 |
| Plus 20-MHz | $1,350 | $1,425 | $1,300 |
| SE | $1,950 | $2,200 | $1,700 |
| SE 20-MHz | $2,400 | $2,500 | $2,300 |
| II | $4,750 | $4,750 | $4,500 |
| NEC Multispeed EL | $900 | $950 | $650 |
| Toshiba T3100/10 | $1,750 | $1,750 | $1,550 |

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# TRAINING

## The training that talks back

*Interactive videodisk instruction can be potent, but consider the cost*

BY DAVID A. LUDLUM
CW STAFF

Chevron Information Technologies Corp. faced a challenge in training computer operators in subjects such as IBM's MVS/XA and IMS. The small number of people involved at any one time did not justify holding classes, and conventional computer-based training (CBT) did not always grab the workers' attention.

The answer has been CBT based on interactive videodisks. This technology gives personal computer-based workstations with high-resolution monitors random access to an analog videodisk, adding full-motion video to the conventional text and graphics of CBT.

Interactive video is more lifelike than the conventional CBT, says Rick Garibaldi, a training analyst at the Chevron Corp. data processing subsidiary. It also provides pizzaz that makes courses entertaining as well as educational, even to nighttime workers. "They don't just sit and get vegged-out in front of the thing," Garibaldi says.

But interactive video is not cheap — a factor that, along with a lack of technical standards among vendors, has limited its use. An annual survey by *Training Magazine* last year found that about 4.5% of U.S. organizations with 50 or more employees use interactive videodisk training, and the number has remained "pretty flat" in recent years, editor Jack Gordon says.

Interactive video is widely viewed as more effective than other media-based training — books or manuals, videotapes and conventional CBT. But it is generally more costly, particularly for custom-made courses.

### Live or Memorex?

Experts disagree on whether interactive video is more effective than classroom training with an instructor, although it can be less costly. It is particularly likely to cost less when the audience is dispersed or the technology simulates the use of expensive equipment such as an airliner.

Rockley Miller, publisher and editor of the newsletter "Videodisc Monitor," says that for subjects such as DP training, live instruction can be superior "if you have the best instructor and a tightly organized course."

But live instruction can be passive for students. Interactive video engages students, helping them retain information, Miller says. It also lets students skip over less relevant parts of courses and repeat ones they have trouble with.

> "THEY DON'T just sit and get vegged-out in front of the thing."
>
> RICK GARIBALDI
> CHEVRON INFORMATION TECHNOLOGIES CORP.

Products are classified according to their level of interactivity. At the low end, frames can be frozen and retrieved through a key pad on the disk player. At the high end, the disk player becomes a storage device controlled by a computer keyboard and software.

Interactive video workstations sold by about a dozen vendors, including IBM and Sony Corp., range in price from $1,500 to $9,000, depending on the level of interactivity and embellishments such as a touch screen. Some include dedicated processors, while others can be run from general-purpose PCs.

Several dozen vendors, most of them small, offer hundreds of off-the-shelf interactive video courses, with computer training being the largest category, Miller says. The vendors often rent courses. Rates may run $75 to $175 per month for one course module on a single disk, with a typical course consisting of five modules.

It is in developing custom-designed courses, especially in producing the video programming, that interactive training can become particularly expensive.

In Chicago, the cost of producing a minute of high-quality video footage for courses is about $2,300, says Marita Decker, an education consultant at Arthur Andersen & Co. Total production costs, including design and programming, can exceed $500,000, she says. Decker produces interactive video programs for companies facing what she calls critical issues, such as helping employees adapt to a merger or the introduction of a major automation system.

Prices or licensing fees for software used to develop interactive video programs, available from several dozen vendors, range in price from about $1,500 at low-level interactivity to about $5,000.

Even when interactive video is judged a viable alternative to classroom training, trainers often view it as a complement rather than a substitute, says Natasha Thomsen, a research associate at Link Resources Corp. in New York.

That is the approach at The Hartford Group, which uses off-the-shelf interactive video courses and is studying joint development of a course with a vendor, says Terri Pawlowski, director of technical training at the insurer's information management department.

"Rather than replace a stand-up class, we mix the media," Pawlowski says. "We want to maintain the contact and networking of the classroom environment."

Ludlum is a *Computerworld* senior writer.


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Turn to the Training section of COMPUTERWORLD's issues for an interesting editorial features addressing these and other questions.

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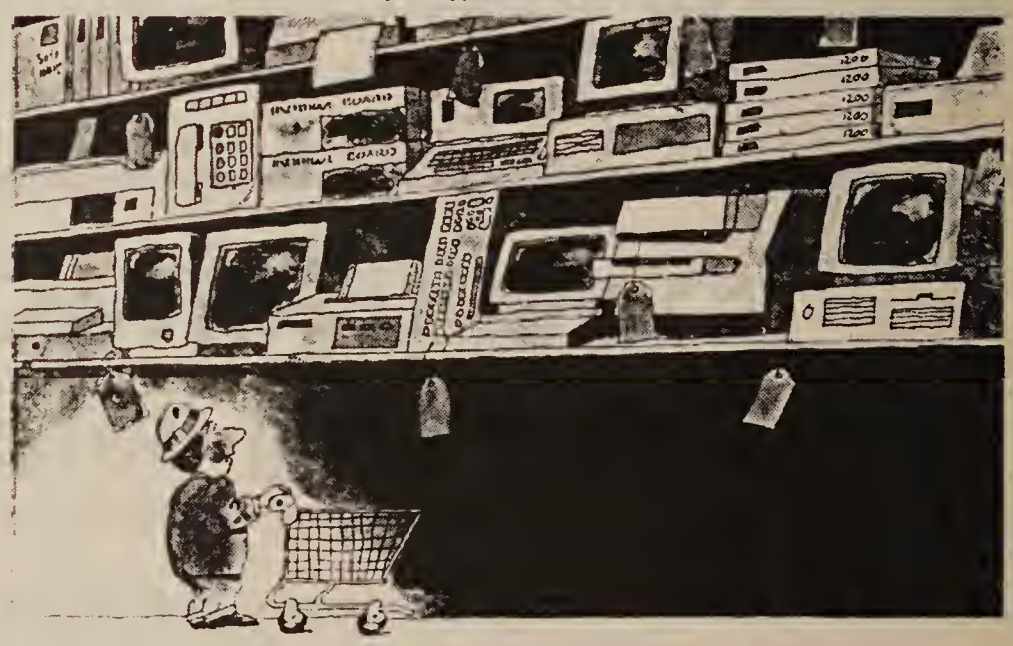

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|---|---|---|
| Sept. 19 | Hardware Roundup: Large, Medium Scale and Special Purpose Systems | Sept. 2 |
| Sept. 26 | Hardware Roundup: Small Scale Systems | Sept. 9 |
| Oct. 3 | Hardware Roundup: Personal Computers and Workstations | Sept. 16 |
| Oct. 17 | AI/Expert Systems | Sept. 30 |
| Oct. 31 | Unix | Oct. 14 |
| Nov. 14 | TBA | Oct. 28 |
| Dec. 5 | LAN's | Nov. 18 |
| Dec. 19 | IBM-Compatible PCs/PS2 Market Products/Monitors | Dec. 2 |

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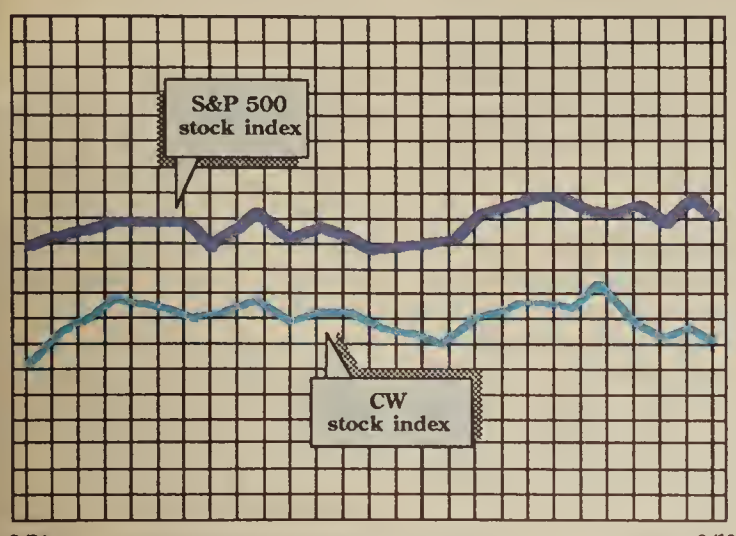
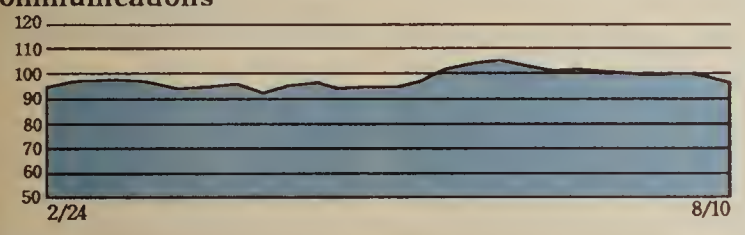
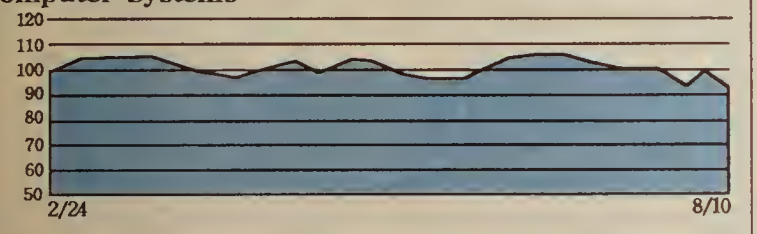



| *Indexes* | *Last Week* | *This Week* |
|---|---|---|
| Communications | 100.2 | **97.3** |
| Computer Systems | 99.3 | **94.1** |
| Software & DP Services | 101.1 | **98.0** |
| Semiconductors | 67.3 | **62.9** |
| Peripherals & Subsystems | 82.2 | **80.5** |
| Leasing Companies | 106.4 | **106.6** |
| Composite Index | 88.0 | **85.2** |
| S&P 500 Index | 115.0 | **110.3** |

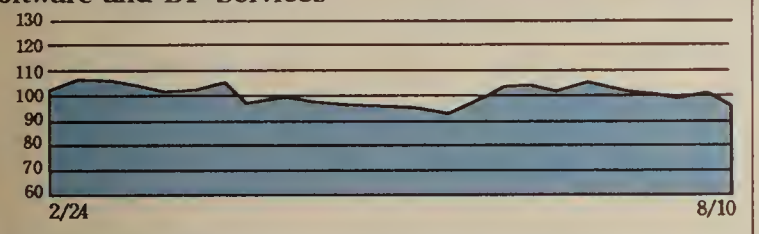
**Communications**



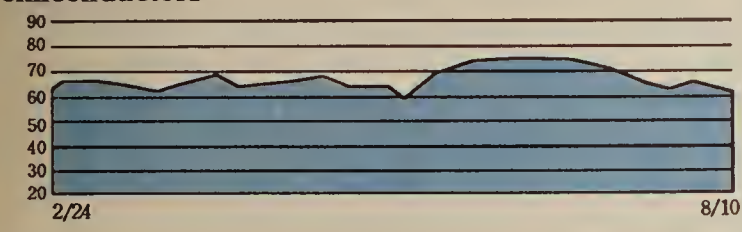

**Computer Systems**



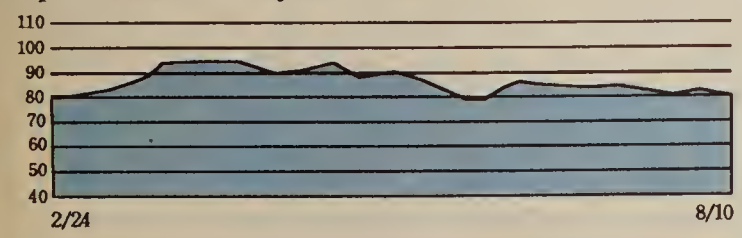

**Software and DP Services**



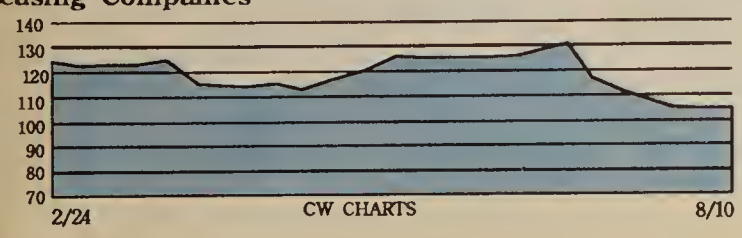

**Semiconductors**




**Peripherals and Subsystems**




**Leasing Companies**




# Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 10, 1988

| EXCH | | 52-WEEK RANGE (1) | | CLOSE AUG. 10 1988 | WEEK NET CHNGE | WEEK PCT CHNGE |
|---|---|---|---|---|---|---|
| | **Communications and Network Services** | | | | | |
| N | AMERICAN INFO TECHS CORP | 100 | 74 | 89.38 | -2.6 | -2.9 |
| Q | ANDREW CORP | 19 | 11 | 17.75 | 0.3 | 1.4 |
| Q | ARTEL COMM CORP | 3 | 1 | 2.25 | -0.1 | -5.3 |
| N | AT&T | 36 | 20 | 25.88 | -0.5 | -1.9 |
| Q | AVANT GARDE COMP INC | 6 | 1 | 1.50 | -0.1 | -7.7 |
| Q | AVANTEK INC | 16 | 5 | 5.50 | -0.3 | -4.3 |
| N | AYDIN CORP | 35 | 16 | 20.00 | 0.1 | 0.6 |
| N | BELL ATLANTIC CORP | 80 | 61 | 68.50 | -3.0 | -4.2 |
| N | BELLSOUTH CORP | 44 | 29 | 40.50 | -1.6 | -3.9 |
| Q | COMPRESSION LABS INC | 6 | 2 | 3.38 | -0.1 | -3.6 |
| O | COMPUTER NETWORK TECH | 5 | 1 | 1.22 | 0.0 | -1.3 |
| O | CONTEL CORP | 40 | 25 | 34.38 | -1.4 | -3.8 |
| Q | DATA SWITCH CORP | 10 | 4 | 6.50 | -0.1 | -1.9 |
| Q | DIGITAL COMM ASSOC | 46 | 20 | 30.75 | -0.5 | -1.6 |
| Q | DYNATECH CORP | 32 | 14 | 21.75 | 0.0 | 0.0 |
| Q | FIBRONICS INTERNATIONAL INC | 5 | 2 | 3.63 | 0.2 | 5.4 |
| Q | GANDALF TECHNOLOGIES | 8 | 5 | 6.50 | -0.5 | -7.1 |
| Q | GENERAL DATACOMM INDS | 10 | 3 | 3.50 | 0.0 | 0.0 |
| N | GTE CORP | 45 | 29 | 40.63 | 0.0 | 0.0 |
| Q | INFOTRON SYS CORP | 14 | 5 | 10.50 | -0.5 | -4.5 |
| N | ITT CORP | 66 | 42 | 48.25 | -1.6 | -3.3 |
| N | M A COM INC | 16 | 7 | 9.88 | -0.8 | -7.1 |
| Q | MCICOMMUNICATIONS CORP | 18 | 7 | 15.88 | -0.6 | -3.8 |
| Q | MICOM SYS INC | 17 | 7 | 15.63 | 0.8 | 5.0 |
| Q | NETWORK EQUIPMENT TECH INC | 28 | 12 | 19.50 | -0.8 | -3.7 |
| Q | NETWORK SYS CORP | 13 | 7 | 9.50 | -0.3 | -2.6 |
| N | NORTHERN TELECOM LTD | 24 | 14 | 17.38 | -0.9 | -4.8 |
| Q | NOVELL INC | 30 | 12 | 24.75 | -1.8 | -6.6 |
| N | NYNEX CORP | 78 | 58 | 63.88 | -2.5 | -3.8 |
| N | PACIFIC TELESIS GROUP | 34 | 23 | 28.13 | -1.3 | -4.3 |
| N | PARADYNE CORP | 9 | 4 | 5.75 | 0.0 | 0.0 |
| A | PENRIL CORP | 5 | 1 | 4.13 | -0.3 | -5.7 |
| N | PLESSEY PLC | 38 | 23 | 27.00 | -1.8 | -6.1 |
| N | SCIENTIFIC ATLANTA INC | 20 | 8 | 13.63 | -0.9 | -6.0 |
| N | SOUTHWESTERN BELL CORP | 46 | 22 | 37.00 | -1.6 | -4.2 |
| Q | 3 COM CORP | 26 | 12 | 17.75 | -0.4 | -2.1 |
| Q | UNGERMANN BASS INC | 13 | 5 | 12.31 | 0.0 | 0.0 |
| N | U S WEST INC | 60 | 43 | 54.88 | -0.9 | -1.6 |
| | **Computer Systems** | | | | | |
| Q | ALLIANT COMPUTER SYS | 19 | 5 | 4.50 | -0.8 | -14.3 |
| Q | ALPHA MICROSYSTEMS | 8 | 3 | 5.75 | -1.0 | -14.8 |
| Q | ALTOS COMPUTER SYS | 15 | 9 | 9.25 | -0.5 | -5.1 |
| A | AMDAHL CORP | 56 | 19 | 42.38 | -4.8 | -10.1 |
| Q | APOLLO COMPUTER INC | 23 | 9 | 9.38 | -0.3 | -2.6 |
| Q | APPLE COMPUTER INC | 60 | 28 | 41.88 | -2.9 | -6.4 |
| N | BOLT BERANEK & NEWMAN | 25 | 12 | 16.63 | 0.1 | 0.8 |
| Q | BRITTON LEE INC | 4 | 1 | 2.50 | -0.2 | -7.0 |
| N | COMPAQ COMPUTER CORP | 79 | 34 | 56.25 | -2.4 | -4.1 |
| Q | COMPUTER AUTOMATION INC | 16 | 4 | 5.00 | -0.1 | -2.4 |
| A | COMPUTER CONSOLES INC | 9 | 2 | 7.75 | -1.0 | -11.4 |
| Q | CONCURRENT COMP CORP | 24 | 11 | 19.38 | 0.0 | 0.0 |
| N | CONTROL DATA CORP DEL | 38 | 18 | 21.75 | -1.8 | -7.4 |
| Q | CONVERGENT TECH | 9 | 3 | 3.44 | -0.3 | -8.3 |
| Q | CONVEX COMPUTER CORP | 17 | 6 | 7.13 | -0.9 | -10.9 |
| N | CRAY RESH INC | 119 | 47 | 78.13 | -3.8 | -4.6 |
| Q | DAISY SYS CORP | 12 | 5 | 8.88 | -0.5 | -5.3 |
| N | DATA GEN CORP | 37 | 16 | 17.38 | -1.0 | -5.4 |
| N | DATAPOINT CORP | 9 | 3 | 4.63 | -0.3 | -5.1 |
| N | DIGITAL EQUIP CORP | 200 | 99 | 100.13 | -3.4 | -3.3 |
| N | FLOATING POINT SYS INC | 11 | 3 | 3.13 | -0.1 | -3.8 |
| N | GOULD INC | 34 | 8 | 13.75 | -1.3 | -8.3 |
| N | HARRIS CORP | 41 | 22 | 26.00 | -1.6 | -5.9 |
| N | HEWLETT PACKARD CO | 74 | 36 | 48.75 | -1.5 | -3.0 |
| N | HONEYWELL INC | 91 | 49 | 62.25 | -3.6 | -5.5 |
| N | IBM | 176 | 102 | 118.88 | -6.9 | -5.5 |
| Q | INFORMATION INTL INC | 16 | 9 | 15.00 | 0.3 | 1.7 |
| Q | IPL SYS INC | 3 | 1 | 2.63 | 0.3 | 10.5 |
| Q | MASS COMPUTER CORP | 14 | 4 | 4.75 | -0.3 | -5.0 |
| N | MATSUSHITA ELEC INDL LTD | 230 | 103 | 206.00 | -17.5 | -7.8 |
| Q | MEGADATA CORP | 6 | 2 | 2.50 | -0.1 | -4.8 |
| Q | MENTOR GRAPHICS CORP | 39 | 14 | 28.50 | -3.0 | -9.5 |
| N | NBI INC | 12 | 3 | 3.75 | -0.3 | -6.3 |
| N | NCR CORP | 87 | 50 | 55.78 | -2.2 | -3.8 |
| N | PRIME COMPUTER INC | 31 | 12 | 14.00 | -0.5 | -3.4 |
| Q | PYRAMID TECHNOLOGY | 16 | 5 | 11.75 | -0.5 | -4.1 |
| Q | STRATUS COMPUTER | 35 | 15 | 23.50 | -1.1 | -4.6 |
| Q | SUN MICROSYSTEM INC | 44 | 14 | 36.75 | -2.5 | -6.4 |
| Q | SYMBOLICS INC | 5 | 1 | 1.00 | -0.1 | -5.9 |
| Q | SEQUENT COMPUTER SYS INC | 19 | 9 | 17.63 | 0.3 | 1.4 |
| N | TANDEM COMPUTERS INC | 37 | 14 | 14.13 | -0.9 | -5.8 |
| N | TANDY CORP | 57 | 28 | 40.25 | -3.4 | -7.7 |
| N | ULTIMATE CORP | 37 | 9 | 10.13 | 0.0 | 0.0 |
| N | UNISYS CORP | 48 | 24 | 33.38 | -1.9 | -5.3 |
| A | WANG LABS INC | 19 | 9 | 9.38 | -0.6 | -6.3 |
| | **Software & DP Services** | | | | | |
| Q | ADVANCED COMP TECH | 6 | 1 | 1.19 | -0.1 | -9.5 |
| N | AGS COMPUTERS INC | 30 | 11 | 26.50 | -0.3 | -0.9 |
| Q | AMERICAN MGMT SYS INC | 20 | 9 | 13.88 | -0.8 | -5.1 |
| Q | AMERICAN SOFTWARE INC | 19 | 6 | 13.50 | -1.0 | -6.9 |
| N | ANACOMP INC | 12 | 4 | 8.25 | -0.8 | -8.3 |
| Q | ANALYSTS INTL CORP | 10 | 4 | 8.88 | 0.1 | 1.4 |
| Q | ASHTON TATE | 33 | 13 | 23.38 | 0.1 | 0.5 |
| Q | ASK COMPUTER SYS INC | 16 | 6 | 13.88 | -0.4 | -2.6 |
| Q | AUTODESK INC | 34 | 12 | 24.50 | -2.0 | -7.5 |
| N | AUTO DATA PROCESSING | 55 | 16 | 38.00 | -0.5 | -1.3 |
| Q | BOOLE & BABBAGE INC | 11 | 5 | 9.50 | 0.4 | 4.1 |
| N | COMPUTER ASSOC INTL INC | 37 | 15 | 26.75 | -0.8 | -2.7 |
| Q | COMPUTER HORIZONS CORP | 14 | 7 | 10.75 | -0.5 | -4.4 |
| N | COMPUTER SCIENCES CORP | 73 | 38 | 45.75 | -2.1 | -4.4 |
| N | COMPUTER TASK GROUP INC | 16 | 9 | 12.38 | 0.0 | 0.0 |
| Q | COGNOS INC | 17 | 4 | 5.06 | -0.2 | -3.6 |
| Q | COMSHARE INC | 27 | 12 | 20.50 | -1.0 | -4.7 |
| N | CULLINET SOFTWARE INC | 14 | 4 | 6.13 | -0.5 | -7.5 |
| Q | DUQUESNE SYS INC | 22 | 10 | 17.13 | -0.6 | -3.5 |
| A | DATA ARCHITECTS INC | 16 | 7 | 13.75 | 0.0 | 0.0 |
| N | GENERAL MTRS (CLS E) | 51 | 30 | 39.25 | -0.8 | -1.9 |
| Q | HOGAN SYS INC | 13 | 3 | 3.88 | -0.1 | -3.1 |
| Q | INFORMIX CORP | 31 | 11 | 11.25 | -1.3 | -10.0 |
| Q | INTELLICORP INC | 8 | 2 | 2.88 | 0.3 | 9.5 |
| Q | KEANE INC | 16 | 6 | 13.50 | -0.8 | -5.3 |
| Q | LOTUS DEV CORP | 40 | 19 | 19.50 | -2.0 | -9.3 |
| Q | MANAGEMENT SCI AMER | 14 | 6 | 9.25 | 0.4 | 4.2 |
| Q | MICRO PRO INTL CORP | 7 | 2 | 3.38 | 0.5 | 17.4 |
| Q | MICROSOFT CORP | 79 | 37 | 50.50 | -5.8 | -10.2 |
| Q | NATIONAL DATA CORP | 34 | 20 | 23.13 | -1.1 | -4.6 |
| Q | MORINO ASSOCIATES INC | 20 | 7 | 15 | -1.5 | -9.2 |
| Q | ON LINE SOFTWARE INTL INC | 22 | 5 | 4.88 | -0.8 | -13.3 |
| Q | ORACLE SYS CORP | 22 | 8 | 17.75 | -2.3 | -11.3 |
| N | PANSOPHIC SYS INC | 28 | 11 | 15.00 | -0.5 | -3.2 |
| Q | POLICY MGMT SYS CORP | 30 | 15 | 22.50 | -0.8 | -3.2 |
| Q | PROGRAMMING & SYS INC | 14 | 7 | 12.50 | -0.4 | -2.9 |
| Q | REYNOLDS & REYNOLDS CO | 38 | 14 | 19.50 | 0.1 | 0.6 |
| Q | SEI CORP | 22 | 10 | 18.75 | -0.3 | -1.3 |
| Q | SHARED MED SYS CORP | 30 | 17 | 17.00 | -1.1 | -6.2 |
| Q | SAGE SOFTWARE INC | 14 | 5 | 6.50 | -0.1 | -1.9 |
| Q | SOFTWARE PUBG CORP | 25 | 5 | 21.63 | -1.8 | -7.5 |
| A | STERLING SOFTWARE INC | 11 | 6 | 6.38 | -0.3 | -3.8 |
| Q | SUNGARD DATA SYS INC | 20 | 10 | 19.13 | 0.0 | 0.0 |
| Q | SYSTEMATICS INC | 34 | 19 | 30.25 | -0.5 | -1.6 |
| N | SYS. SOFT INC | 24 | 7 | 19 | 0.8 | 4.2 |
| Q | VM SOFTWARE INC | 20 | 7 | 16.00 | -0.3 | -1.5 |
| | **Semiconductors** | | | | | |
| N | ADV MICRO DEVICES INC | 25 | 8 | 12.13 | -1.4 | -10.2 |
| N | ANALOG DEVICES INC | 24 | 8 | 12.88 | -0.9 | -6.4 |
| Q | ANALOGIC CORP | 13 | 5 | 7.13 | -0.4 | -5.0 |
| Q | INTEL CORP | 42 | 18 | 31.25 | -3.5 | -10.1 |
| Q | LSI LOGIC CORP | 15 | 7 | 12.00 | -1.3 | -9.4 |
| N | MOTOROLA INC | 74 | 35 | 43.63 | -3.6 | -7.7 |
| N | NATL SEMICONDUCTOR | 22 | 10 | 10.25 | -0.6 | -5.7 |
| N | TEXAS INSTRS INC | 80 | 36 | 41.50 | -1.4 | -3.2 |
| A | WESTERN DIGITAL CORP | 29 | 11 | 14.38 | -0.3 | -1.7 |
| | **Peripherals** | | | | | |
| Q | ALLOY COMP. | 13 | 2 | 2.00 | 0.0 | 0.0 |
| N | AM INTL INC | 9 | 3 | 5.75 | -0.4 | -6.1 |
| Q | AST RESH INC | 21 | 6 | 14.50 | -1.6 | -10.1 |
| Q | AUTO TROL TECH CORP | 7 | 3 | 5.00 | -0.1 | -2.4 |
| Q | BANCTEC INC | 14 | 5 | 8.75 | -0.5 | -5.4 |
| Q | CIPHER DATA PRODS INC | 12 | 4 | 8.88 | -0.6 | -6.6 |
| A | COGNITRONICS CORP | 5 | 2 | 3.13 | -0.1 | -3.8 |
| N | COMPUGRAPHIC CORP | 28 | 19 | 26.88 | 0.0 | 0.0 |
| A | DATAPRODUCTS CORP | 24 | 7 | 11.00 | -0.4 | -3.3 |
| A | DATARAM CORP | 8 | 5 | 7.63 | 0.0 | 0.0 |
| N | EASTMAN KODAK CO | 71 | 39 | 42.50 | -2.9 | -6.3 |
| Q | E M C CORP MASS | 29 | 4 | 4.50 | -0.9 | -16.3 |
| Q | EMULEX CORP | 9 | 4 | 7.31 | 0.1 | 0.9 |
| Q | EVANS & SUTHERLAND | 35 | 14 | 16.00 | -0.3 | -1.5 |
| Q | ICOT CORP | 8 | 3 | 3.50 | 0.1 | 3.7 |
| Q | INTERLEAF INC | 24 | 10 | 11.13 | -0.4 | -3.3 |
| Q | IOMEGA CORP | 5 | 1 | 3.63 | -0.1 | -1.7 |
| Q | LEE DATA CORP | 6 | 3 | 3.25 | -0.2 | -5.5 |
| Q | MASSTOR SYS CORP | 5 | 1 | 2.50 | -0.1 | -2.5 |
| Q | MAXTOR CORP | 16 | 6 | 8.00 | -0.3 | -3.0 |
| Q | MICROPOLIS CORP | 38 | 12 | 12.50 | -0.6 | -4.8 |
| Q | MINISCRIBE CORP | 17 | 5 | 10.50 | -1.5 | -12.5 |
| N | MINNESOTA MNG & MFG CO | 84 | 45 | 60.63 | -3.8 | -5.8 |
| A | MSI DATA CORP | 19 | 8 | 9.88 | -0.4 | -3.7 |
| Q | PERSONAL COMPUTER PRODUCTS INC | 7 | 4 | 4.94 | -0.3 | -5.9 |
| Q | PRIAM CORP | 4 | 1 | 1.38 | -0.3 | -15.4 |
| Q | PRINTRONIX INC | 12 | 7 | 9.63 | -0.1 | -1.3 |
| N | QMS INC | 27 | 7 | 8.38 | 0.9 | 11.7 |
| Q | QUANTUM CORP | 19 | 8 | 10.50 | -0.3 | -2.3 |
| Q | RAMTEK CORP | 6 | 1 | 0.59 | 0.0 | 5.5 |
| N | RECOGNITION EQUIP INC | 21 | 6 | 8.25 | 0.0 | 0.0 |
| Q | REXON INC | 11 | 4 | 7.00 | 0.6 | 9.8 |
| Q | SCAN TRON CORP | 17 | 7 | 15.50 | 0.0 | 0.0 |
| Q | SEAGATE TECHNOLOGY | 32 | 10 | 10.38 | 0.0 | 0.0 |
| N | STORAGE TECH CORP | 4 | 1 | 2.38 | 0.0 | 0.0 |
| Q | TANDON CORP | 5 | 1 | 2.00 | -0.3 | -11.1 |
| A | TEC INC | 6 | 3 | 3.88 | 1.0 | 34.8 |
| N | TEKTRONIX INC | 41 | 21 | 22.63 | 0.0 | 0.0 |
| Q | TELEVIDEO SYS INC | 3 | 1 | 0.88 | -0.2 | -15.1 |
| N | TELEX CORP | 73 | 30 | 49.00 | 0.0 | 0.0 |
| Q | WYSE TECH | NA | NA | 21.00 | 0.0 | 0.0 |
| N | XEROX CORP | 85 | 50 | 53.38 | 0.0 | 0.0 |
| Q | XIOEX CORP | 15 | 5 | 9.00 | 0.1 | 1.4 |
| | **Leasing Companies** | | | | | |
| N | CAPITAL ASSOCIATES INTERNATIONAL INC | 9 | 4 | 5.63 | -0.4 | -6.3 |
| N | COMDISCO INC | 37 | 12 | 20.50 | -0.9 | -4.1 |
| Q | CONTINENTAL INFO SYS | 12 | 4 | 4.00 | 0.3 | 6.7 |
| Q | PHOENIX AMERN INC | 5 | 2 | 2.88 | 0.1 | 4.5 |
| Q | SELECTERM INC | 6 | 3 | 4.88 | 0.0 | 0.0 |

EXCH: N=NEW YORK; A=AMERICAN; Q=NATIONAL; O=OVER-THE-COUNTER; S=SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

# Scraped knees

## *Several firms take yet another tumble during losing streak*

The Dow Jones industrial average spent the better part of last week battling the tail end of its first consecutive five-session losing streak in nearly a year, and many computer issues were caught in the down draft. IBM was one of the hardest hit, falling 4⅞ points from a week earlier to finish Thursday's close at 119.

In other action during the four days of trading, NCR Corp. fell 3⅜ points to 55¼; Amdahl Corp. shot up and down, finishing off 2⅞ points to 44⅜; Cray Research, Inc. dropped 2½ points to 78½; Digital Equipment Corp. was off 2⅜ points to 101; Unisys Corp. slipped 2⅛ points to 33¼ despite announcing plans to purchase Convergent, Inc. for $332 million; Compaq Computer Corp. was down 1¾ points to 57; and Lotus Development Corp. was hurt when the departure of its marketing chief raised concerns about the already delayed delivery of a 1-2-3 upgrade (see story page 1) and fell 1⅝ points to 19⅞. Some firms, however, managed to keep their heads above the waves. Fibronics International, Inc. gained half a point to 3¾ after financial results reporting the company's first profitable quarter in two years.

JAMES DALY

# Republicans get free ride on convention net

BY PATRICIA KEEFE
CW STAFF

NEW ORLEANS — Befitting the GOP image of fiscal restraint, the Republican National Committee has managed to finagle its way into free use of a 120-node network for this week's convention.

A package deal with the city of New Orleans requires that the city pick up a leasing tab in excess of $500,000 for the convention network, made up mostly of hardware and software from 3Com Corp. and Tandy Corp.

After the departure of the party faithful, Tandy plans to donate the network to the city, said Julie Perrier, a spokeswoman for the convention who is overseeing the computer network.

Staffers at the convention will rely on a roughly two-mile-long 3Com network, situated within the New Orleans Superdome, to link participants and support committees spread out inside the stadium and in area hotels.

### Middle of the road

The Republicans' temperate approach to information processing is reflected not only in the cost of the network — which is about $150,000 less than the local-area network installed at last month's Democratic National Convention [CW, July 18] — but also in overall system size.

Where the Democrats concocted a web of nine local-area networks over 23 miles of fiber-optic cable, the GOP net was executed on a much more conservative scale. The Republicans made do with three centrally located, interconnected LANs linked to four remote work groups scattered across the city.

Despite its relatively diminutive stature, the logistics of the network required a substantial investment in time, Perrier said. Tandy, acting in its capacity as a 3Com reseller, has spent a solid five months designing, installing and tweaking the network. Tandy is actually managing the network, she added.

Tandy also trained Republican Party volunteers and got the nod to provide 18-hour-a-day support during the convention.

Running under 3Com's 3+ network operating system, the network consists of about six segments of thin Ethernet cable connected via a 3Com Multiconnect repeater, 120 3Com 3Station diskless workstations, five Intel Corp. 80386-based dedicated file servers and about 45 peripherals, including Tandy LP1K laser printers. About 70 of those workstations and two of the 3Server/401 file servers will be used in the Superdome.

Also located on the convention floor are about 30 standalone Intel 80286-based Tandy 3000HLs. They will be used for spreadsheet, word processing and special report activities. Lotus Development Corp.'s 1-2-3 and Aldus Corp.'s Pagemaker got the votes here.

Information has already been downloaded from a Digital Equipment Corp. VAX located at party headquarters in Washington, D.C. Via a remote link, it will be used to maintain data emanating from the convention.

All the planks of this network are connected. The four remote work groups will transmit files to and from the Superdome using 3Com's 3+ Route.

Several software packages will be deployed on the network. 3Com's 3+ Mail will route electronic mail messages systemwide while staff committees use a multiuser version of Wordperfect Corp. word processing. This will enable interactive review and editing of documents.

A version of Borland International's Paradox database — customized by Tandy to make it menu-driven — will help keep track of volunteer schedules, transportation and hotel arrangements, news releases and related documents.

### No 'wimp factor'

A four-pronged approach will eliminate any "wimp factor" in security efforts to keep access to the network and the Superdome tight as a drum. For starters, the system employs password security. Each of the 200 users has his own directory, which cannot be accessed by anyone else.

Paradox will enable security personnel to monitor access to various entrances and checkpoints throughout the convention center and to maintain records of equipment.

In addition, two 3Com devices will administer network security. Lanscanner is a handheld device used to locate breaks, weaknesses and obstructions in the network wiring. Etherprobe software will assist in troubleshooting individual packets of information transmitted on the network and help maintain data reliability during the convention.

The only snag in the entire process was a brief encounter with a brownout, Perrier said. Given the nation's heatwave, that problem could return at any time. But uninterruptible power supply and a universal disturbance analyzer will allow the GOP LAN to just say no to power fluctuations. And just to be safe, two redundant file servers are being used for nightly backup purposes.

# Viruses

FROM PAGE 1

number of outstanding computer crime-related claims would devastate the industry if they were all brought to fruition.

And the virus outbreak has made a bad situation even worse. John McAfee, president of Interpath Corp. and head of the Computer Virus Industry Association, estimates that 250,000 personal computers have been hit by the virus bug.

Additionally, it has always been difficult to put a dollar value on information, and some assert that if everyone hit by a virus made a claim, the courts would be tied up for eons just figuring out how much the data was worth.

### Corrupting?

"A virus corrupts a magnetic tape containing hundreds of thousands of dollars in trade secrets. But is the damage $100,000 for the secrets or $20 for the reel of tape?" asked Cheryl Helsing, a San Francisco-based senior manager for computer security services with the Deloitte Haskins & Sells accounting firm.

What adds insult to injury, users say, is that the insurance companies have put a squeeze on security coverage of late; the cost has gone up, while damage limits have dropped and deductibles have risen. "Essentially, you're buying less coverage for more money," Helsing said. "Many now look to insurance only to protect against the really catastrophic loss."

Depending on their particular policy, virus sufferers may indeed be covered. The two most widely issued policies are the Financial Institution Bond, which offers a computer-security rider that protects against fraudulent entry of data or change of data, and the Electronic Computer Crime Policy, which offers similar services.

### Lofty deductibles

But there is an important catch-22: the deductible on many policies — which often begins at around $10,000, but may skyrocket to $3 million at large banks — is frequently so great as to negate the need to file for damages.

Consequently, companies may soon learn to live with the fact that they will have to absorb smaller losses and rely on their insurance only for a catastrophic loss. That was true at *The Providence Journal-Bulletin*, where a Pakistani virus hit the daily newspaper publisher earlier this year and damaged dozens of hard disks. "Our damage couldn't have been more than $10,000, but our deductible was probably 10-times that," an MIS representative said.

One underlying problem, most underwriters admit, is that they cannot keep pace with changes in the technology. While there have always been risks in information security, they were easier to contain in the mainframe-dominated era, when operations centers were under lock and key and access was limited.

The virus is a direct offshoot of the democratization of information that the PC brought about. And in an age when a computer bug may destroy or corrupt millions of dollars in data in only a few minutes, viruses are suddenly taken as deadly serious; a bill introduced into the U.S. House of Representatives in June would make it a federal crime to insert a malicious virus into a computer.

As a result, the Surety Association of America, a quilt of nearly 600 insurance underwriters, has formed a committee to begin reworking some of its policies, and computer virues "will certainly be on the agenda," association Vice-President Frank LeMunyon said.

### Invisible threat

Even if coverage is extended, the very nature of viruses — random, difficult to trace and with an ability to lie dormant for months — may make it difficult to ever point a litigious finger. Software producer Aldus Corp. recently received virus-infected disks from a beta-test site, and for three days it unwittingly planted the virus in thousands of copies of its Freehand illustration program being manufactured on the assembly line. But since it unknowingly transferred the virus, the Seattle firm was not seen as liable.

Although policyholders face an uncertain future in attaining virus coverage, some insurers offer a ray of hope. "We're doing like everyone else: trying to understand the technical aspects of the virus," said Paul Stewman, senior vice-president at The Chubb Corp. "Maybe then we will be able to relate it to some coverage."

# Bell tolls for Shadow Hawk

BY JEAN S. BOZMAN
CW STAFF

Who knows the password to gain entry into the Bell Laboratories national network? The Shadow Hawk knows, says the U.S. attorney in Chicago, who alleged last week that someone using that nom de guerre stole $1.02 million worth of AT&T proprietary software by hacking his way into the Bell Laboratories national network.

Whoever the Shadow Hawk is, he reportedly copied 52 AT&T proprietary programs between July and September 1987. U.S. Attorney Anton Valukas alleged last week that the Shadow Hawk is Herbert M. Zinn, 18, of Chicago.

Valukas' office filed criminal juvenile delinquency charges against Zinn, alleging that he penetrated a Bell Labs network linking sites in Naperville, Ill., Warren, N.J., and Burlington, N.C., as well as a computer at Robbins Air Force Base in Georgia.

The complaint contends that Zinn then published the passwords used to break into the network on electronic bulletin boards in Chicago and Texas. "Our office won't comment on any of the techniques used," said Bill Cook, assistant U.S. attorney here. "What he did will come out in the course of the trial."

Zinn was not immediately arrested, but he was questioned by Federal Bureau of Investigation agents and the U.S. Secret Service, which enforces the federal Computer Fraud and Abuse Law of 1986. Federal agents then seized three computers at Zinn's home, including an AT&T Unix personal computer.

Zinn is scheduled to face the charges at an arraignment in federal court this week. If convicted, Zinn could spend the next three years — until he reaches age 21 — in a federal prison for juvenile offenders, Cook said.

Agents were led to Zinn's address by telephone numbers stored on files in the AT&T computers that fell victim to the electronic break-in, Cook said. Federal agents contend that Zinn's Unix PC contains some or all of those programs in its hard disk memory. Before seizing Zinn's equipment, agents obtained a search warrant from a federal judge.

AT&T would not comment on the federal complaint, but a spokesman said it would "cooperate fully" with the federal government. "AT&T takes the security of its network very seriously," the spokesman said. "We employ a whole range of network and computer security techniques and strongly support laws that address issues of communications piracy and fraud."

Zinn's age means the public will have access to the government's prosecution of a hacker, many of whom are younger, said Donn Parker, a senior management consultant at SRI International in Menlo Park, Calif.

# DG catching up with rollouts

BY NELL MARGOLIS
CW STAFF

WESTBORO, Mass. — Two computers unveiled by Data General Corp. left market analysts impressed on the technology front but underwhelmed by a corporate strategy they say is mired in the soul of an old machine.

Announced last week were the Eclipse MV/25000 DC, a low-end extension of DG's MV minicomputer line, and the Dasher/386, which sets a new high-end mark for the company's personal computer offerings.

The 32-bit MV/2500 is aimed at the departmental and small-business market already staked out by such turf lords as Digital Equipment Corp.'s Microvax II and IBM's AS/400, and recently targeted by Wang Laboratories, Inc.'s VS 5000 line.

The system can support up to 64 users, runs under all three DG operating systems, beats the speed of other MV models by 72% and is two to three times faster than a comparably configured Microvax II, DG said.

In addition, DG Product Marketing Manager Jamie Hintlian said, the new MV is the the first to provide both disk and tape compatibility across the entire MV line — a migration opportunity for current customers.

"What you see," said Stephen Dube, an analyst with Shearson Lehman Hutton, Inc., "is DG catching up with the industry's two major competitors: DEC and IBM."

### Insufficient

Greg Marus, industry analyst at San Jose, Calif.-based Dataquest, Inc., called the introduction "necessary for DG but not sufficient." The system "doesn't stake out any encouraging future direction," he said.

The new Dasher is an IBM Personal Computer AT-compatible, Intel Corp. 80386 model that operates at 16 MHz. DG also announced a seven-member family of terminals with prices as much as 50% lower than those of the models they replace.

At entry prices of $30,000 and $5,735 for the MV/25000 and the Dasher/386, respectively, Hintlian said, both new DG entries are price/performance high watermarks.

Industry analysts did not doubt it. "Price/performance has always been DG's trump card," said Stephen Widen, analyst at Technology Financial Services, Inc., a market research firm based in Chelmsford, Mass. However, some questioned how meaningful the distinction would be to DG.

"DG would be outselling lots of people if the only question was how you do on benchmarks," Marus said. "They've been technologically superior for a long time, and it hasn't necessarily translated into financial success."

# Netview/PC

FROM PAGE 1

write applications in C to send network management information to IBM's Netview via the new Netview/PC interface. Vendors reportedly have complained about the current version's requirement that they use assembler.

• The code for the new interface will not be available to most developers until the second quarter of 1989. However, IBM has already released code for the interface to a select group of vendors.

These vendors plan to demonstrate jointly with IBM their new products built around the OS/2-based Netview/PC at the upcoming Telecommunications Association '88 show, which will be held in San Diego next month.

Telwatch, Inc. will be one of those companies, according to Jim Edwards, president of the Boulder, Colo., network management firm.

IBM spokesman Robert Anderson refused to confirm or deny this information. However, he said that IBM recognizes the need for an OS/2 Extended PS/2 version of Netview/PC for the purpose of supporting more sophisticated applications, getting beyond the 640K-byte memory restriction and running multiple applications concurrently.

The OS/2-based Netview/PC's greater power and multitasking capabilities will allow it to act simultaneously as a liaison between networking devices and Netview and as a local network management system in its own right, according to Telwatch's Edwards.

James Nevers, a senior telecommunications engineer at United Airlines MIS subsidiary Covia Corp., said he would like to see Netview/PC on a PS/2 so that he could migrate some of his department's traffic engineering programs to the same system.

The 640K-byte memory limitation, coupled with the cost of a Netview/PC system, has deterred Covia from using the interface for additional applications and networking devices, according to Ken Cieszynski, an engineer in technical systems development at Covia.

The 640K-byte barrier has also prevented Covia's PC software developers from adding more functionality to the interface, he added.

IBM has left some questions unanswered — notably whether, when and to what extent OS/2-based Netview/PC will incorporate graphics based on the OS/2 Presentation Manager. But this did not seem to stop developers from planning support for the new version.

"I think it's a safe bet that the graphics will either be Presentation Manager-compatible or capable of being rolled into it," said Dixon Doll, president of Ann Arbor, Mich., software and consulting company The DMW Group, Inc.

Digital Communications Associates, Inc. (DCA) said it anticipates no difficulty in migrating its current product for the PC-DOS version, according to DCA spokesman Tim Musselman.

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# NAS, Amdahl users not budged by MVS/ESA

BY J. A. SAVAGE
CW STAFF

IBM plug-compatible manufacturers (PCM) Amdahl Corp. and National Advanced Systems have yet to announce exactly when they will offer IBM's next-generation operating system, MVS/ESA, but that seems to matter little to their current customers.

Meanwhile, the recent announcement of IBM's S series, with the ability to run at 100 and more million instructions per second (MIPS) on MVS/ESA, has piqued curiosity only enough to monitor the system's performance while others pay for the privilege of being guinea pigs.

IBM's ES/3090 S series mainframes have a performance boost of about 40% over the previous high-end 3090, which translates into 100 MIPS or more. But after discounting increased prices on hardware, maintenance and software, the price/performance increase melts to about 15%. The price tag is $12.4 million.

Amdahl, which introduced a 100-MIPS machine in May for $13.1 million, reduced prices on that machine early this month to $11.3 million. It is slated for shipment in the fourth quarter. NAS does not yet have a box in that category.

### Slow to ESA

The most glaring difference between IBM and its PCMs is the speed of migration to its MVS/ESA operating system — an eventuality in the mainframe world.

Amdahl has promised ESA support but said it will not announce an availability date until this fall. The same is true for NAS. IBM, however, said it began shipping limited quantities of the operating system in late July. ESA may be used in the 3090 E machines and two 4381 E models, as well as in the S series.

"IBM and the current core of large shops want to be able to march down the road and get ready for Summit," the code name for IBM's next generation, said Paul Zorfass, director of computer research at The Yankee Group, a consulting firm in Boston. To prepare for Summit, those 100 largest users, according to Zorfass, want to incorporate MVS/ESA.

ESA is an integral part of the S series, responsible for 56% of the improved performance over the E series, according to IBM.

And while NAS and Amdahl both predicted earlier this year that implementing ESA would be easy, last month Amdahl's Chief Financial Officer Ed Thompson said the company had to increase the amount of money set aside for ESA development "because it hits a couple more boards than we expected."

Several users of systems that include both IBM and Amdahl mainframes said that while they are certainly evaluating the S series, they feel no immediate need to switch operating systems.

"We expect to get into ESA, but we'll continue to operate MVS/XA on some systems," said William Better, bureau manager of information and communications services at the Illinois Central Management Service Computer Center. "We would not have a mass exodus" to ESA, he said.

Jerome Doniger, general manager of the information technology acquisition division at the U.S. Postal Service, said that cost analysis is more important than rapid migration, particularly cost analysis on proven capability. Doniger, who has four IBM mainframes, two Amdahls and one NAS, said he was not about to scrap his existing iron but is looking for upgrades.

### Some like it

Still, there are those IBM customers who cannot wait. "If I had the option, I would wait. But we're driven to move quickly to a bigger box," said Frank Erbrick, vice-president of information services at United Postal Service, Inc., which handles 10 million packages per day. He added that he will embrace ESA as soon as it rolls out.

In the case of the next generation of top-end mainframes — with the exception of the largest users — users may be described as blase at best. Some IBM watchers have predicted that the Summit computer will be out in 18 months.

"It could be six months or six years; I'm not holding my breath," the Postal Service's Doniger said.

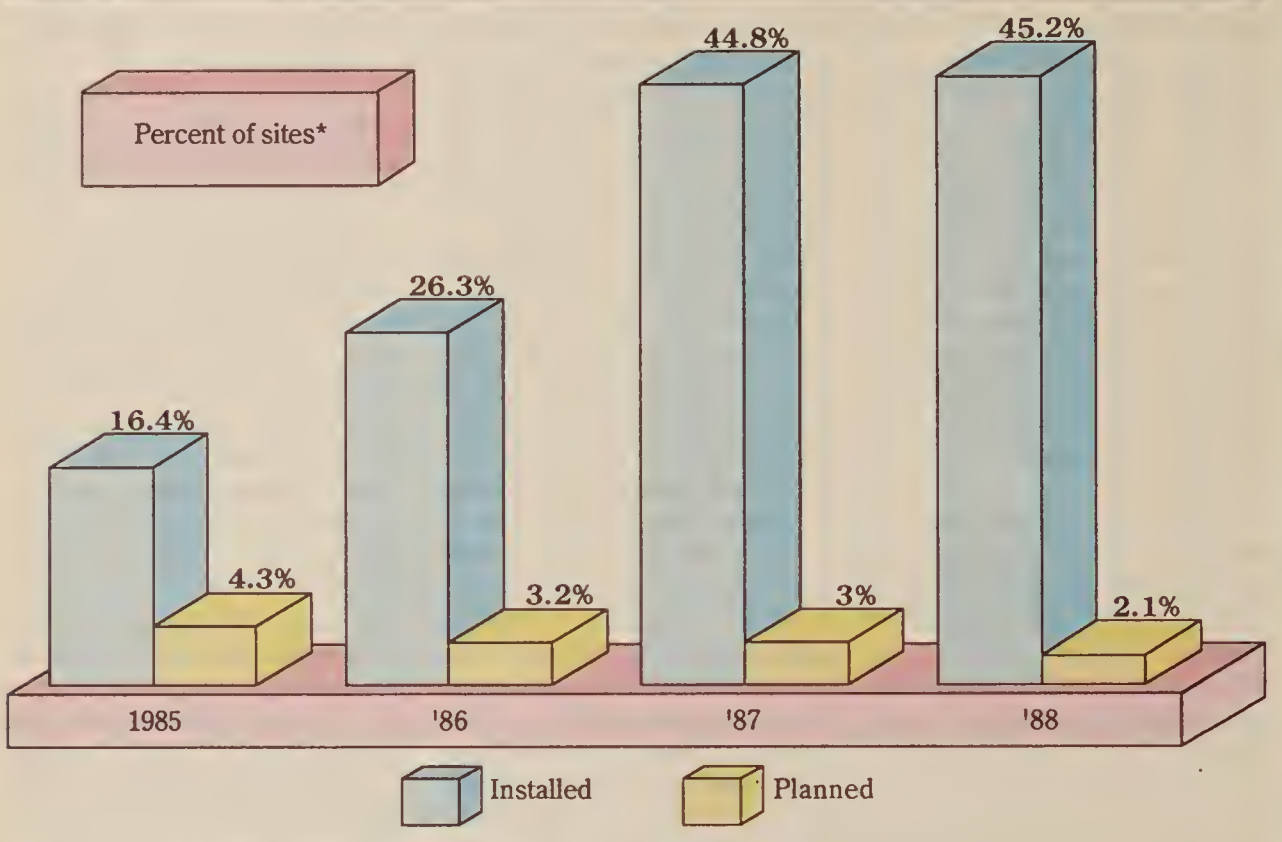
The consensus of users polled here is that they will have to address growth between now and whenever Summit appears on the horizon but that growth still is not necessarily in machines with MVS/ESA.

Of growing significance to the bottom line is the cost of upgrading mainframes. IBM said it will field-upgrade the S models. But this is estimated to take nearly 24 hours, and it can cost more than $250,000 for a 3090 Model 600E upgrade to a 600S, according to Bob Djurdjevic, president of Annex Research, Inc., a Phoenix, Ariz.-based mainframe consulting group. This is an 11% increase over the list price of a new Model 600S.

## TRENDS

# Micro-mainframe link software

### Installations level off; buying plans taper




*Base of 6,900 IBM and plug-compatible mainframe sites

Call it ironic, but today's connectivity heyday is stifling the growth of one of the original communications alternatives. Despite dramatic growth early on, micro-to-mainframe communications software sales have begun to stabilize and buying intentions are waning, according to figures from a Focus Research Systems, Inc. survey.

A major factor is a wide variety of connectivity options. Because large data sets currently may reside in places other than a mainframe, so-called local data has risen in prominence. And the biggest bastion of local data is personal computers tied to local-area networks.

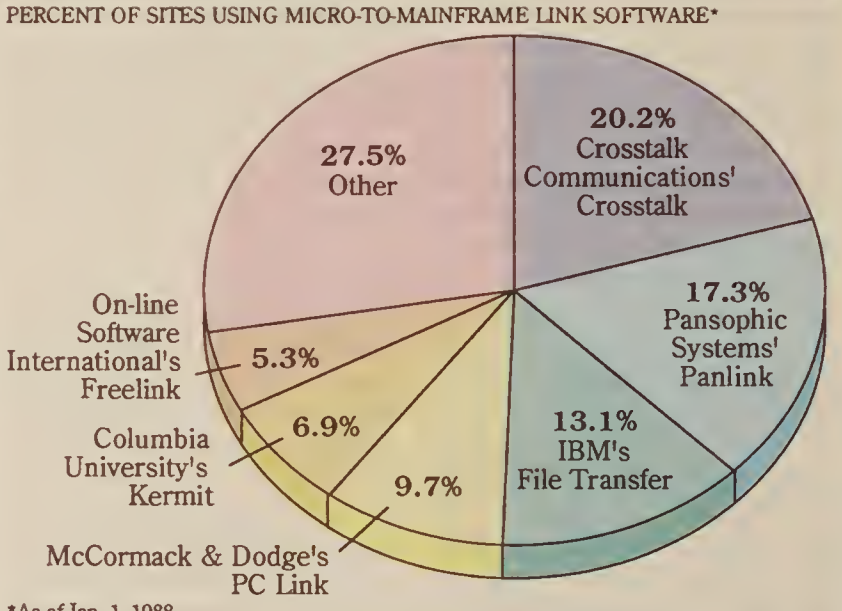
The survey suggests that as the number of sites with micro-to-mainframe communications software installed nears saturation, the percentage of sites planning these implementations will continue to dwindle. Not only will there be fewer potential installations, but, more important, users who have not yet installed this software may well opt for sharing data on smaller machines and across networks.

The big players in the commercial market, however, should remain the same, according to the respondents' buying plans. Crosstalk Communications Co.'s Crosstalk, which includes a terminal emulation feature, makes up approximately one-fifth of the installed base and is expected to claim a similar share among future purchases.

LAURA O'CONNELL

### Handful of tools claim bulk of market . . .

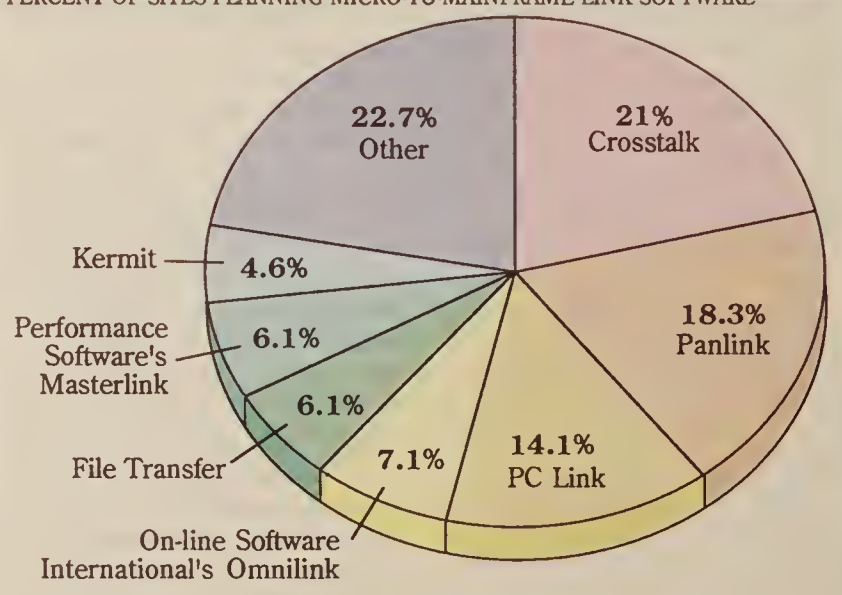
PERCENT OF SITES USING MICRO-TO-MAINFRAME LINK SOFTWARE*




*As of Jan. 1, 1988

### . . . and dominate purchase plans as well

PERCENT OF SITES PLANNING MICRO-TO-MAINFRAME LINK SOFTWARE*




*As of Jan. 1, 1988

SOURCE: FOCUS RESEARCH SYSTEMS, INC.
CW CHARTS

## INSIDE LINES

**Then there's that other Unix.** For those who track product ship dates, here's another for the files. Microsoft and AT&T's joint project to develop a common Unix (sound familiar?) for Intel 80386 boxes was supposed to ship early this year, and then at "midyear." The latest word is that the product will ship to OEM customers next month, with actual packaged user product appearing in earnest early next year. The $64,000 question is, How well will Unix/386 be received by a user base overwhelmed by news of the gargantuan struggle between Open Look and the still-unwritten system from the Open Software Foundation?

**Move over, Iacocca.** How do you spell relief from those old "Where do I turn for my next good read now that my copy of Sculley is dog-eared to death and I know all the best parts by heart already anyway" blues? Try C-U-L-L-I-N-A-N-E. The East Coast version of the Book of John is in the works and will be in your hands either sooner or later, depending on whose report you listen to.

**Off the cuff.** GE Information Services, the computer services arm of giant General Electric, had to send a reassuring memo to its employees after GE Chairman Jack Welch was quoted as casually suggesting that the information services unit could be sold. A spokesman said the unit is not for sale. "I think it was just an offhand comment . . . that any GE business probably could be put up for sale. The way [Welch] runs GE, you never know," the spokesman said.

**Social security scuttlebutt.** Bob Randolph at Technology Financial Services in Chelmsford, Mass., last week said DEC has plans to announce a retirement program for older employees in the next several weeks. A DEC spokeswoman said DEC has a longstanding early retirement plan open to employees with 20 years or more of experience at DEC. But, she added, "We don't expect to see an increase in retirement because of any program. However, retirement numbers could increase as the number of older employees increases due to the aging of the work force."

**Silverlake vein shallow?** With the lackluster performance of IBM's 9370 fresh in its mind, Forrester Research in Cambridge, Mass., is poised to release a report that may douse the early flames of excitement for the AS/400. "IBM has burned too many bridges in the mid-range at large accounts, and the AS/400 has too many holes in it for IBM to win new accounts," Forrester's John McCarthy said. He added, however, that the machine will succeed in appealing to current System/36 and 38 users.

**Wait till spring fever hits.** Adelphi University, Pace University and Sarah Lawrence College will be the testing and evaluation sites for anti-computer virus measures marketed by members of the newly formed Computer Virus Industry Association. The testing program will use a combination of live viruses and a variety of simulation tools to determine the effectiveness of each product.

**This is Open-ness?** The Open Software Foundation (OSF) was scheduled to announce the location of its world headquarters today but put the announcement on hold at the last minute. OSF claimed it is "all set and ready," but the current tenants in their soon-to-be new home have not settled all the details of their move. The location will be close to Boston's Logan International Airport and should be announced next week. Another pending item is OSF's license for the AT&T Unix System V operating system. OSF said the legal matters associated with licensing the product from AT&T are still being reviewed.

*The authoritative champions of the information systems professional go head to head with the upstart stalking horses of the PC volume buyer this week, as* Computerworld *and* PC Week *face off in the computer publishing softball championship. The youth of the micromaniacs is seen as an edge by some, but experience hopefully will carry the day. If you can't wait to read how Spencer Katt gets his comeuppance, contact the hot line at 800-343-6474 or 508-879-0700, and News Editor Pete Bartolik will swap box scores for news tips.*

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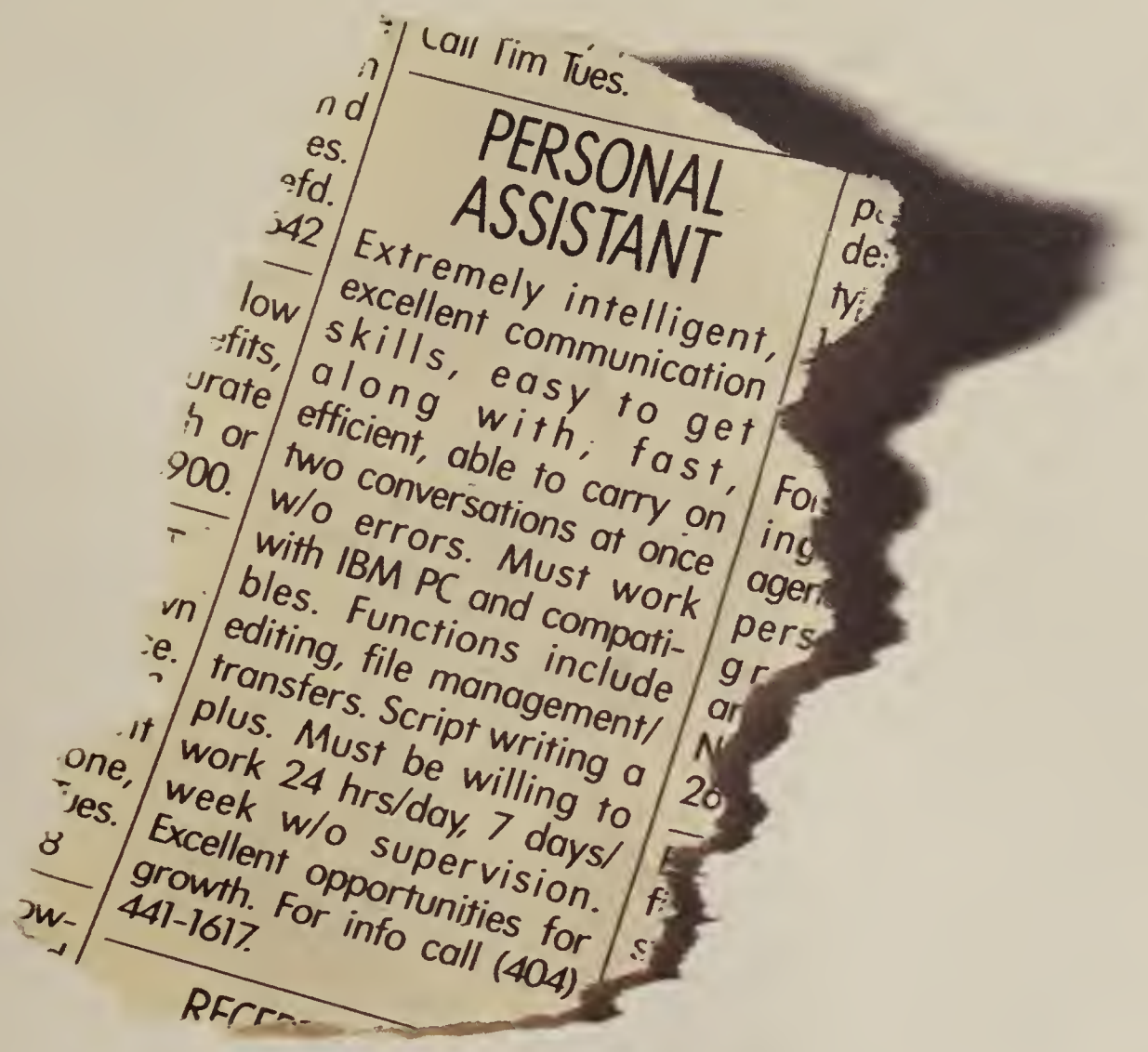


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